



बामर लॉरी एण्ड कं. लिमिटेड
Balmer Lawrie & Co. Ltd.

(A Government of India Enterprise)
Engineering & Projects
21, Netaji Subhas Road
Kolkata - 700 001

**Supply, Installation, Testing & Commissioning of Fire
Protection System for Central Warehouse**

at

AMTZ, ANDHRA PRADESH

Tender No. EP / AMTZ / CWH / FPS / 04

Tender Date: 12.06.2019

Due Date: 02.07.2019 , 16:00 Hrs

UNPRICED PART (PART-I)

TENDERER'S CHECKLIST POINTS

Tenderer shall require filling in the table below appropriately:

SI No.	Submission of Document	Bidder's Confirmation/Submission (Yes / No)
1	Earnest Money Deposit	
2	90 days validity of the offer confirmation	
3	Audited Annual Reports (for past three years)	
4	Copy of Work Order and Completion Certificates for similar job as per Pre-qualification Criteria	
5	Power of Attorney of the Signatory	
6	PAN	
7	Provident Fund Registration	
8	GSTIN Registration	
9	ESI Registration, if applicable	
10	Valid MSE or NSIC certificate as per tender if applicable	
11	Compliance of Company's HSE policy	
12	Price Schedule in Un-priced Bid duly blanked out and signed	
13	Tender Document (along with addendum if any) duly signed and stamped on all pages	
14	Price quoted strictly as per Tender price schedule	
15	Payment Terms in compliance to tender requirement	
16	Completion Period in compliance to tender requirement	
17	LD clause in compliance to tender requirement	
18	Warranties and Guarantee in compliance to tender requirement	
19	All others Technical & Commercial Terms & Conditions shall remain unaltered as per Tender document	

Hard copies of the above confirmatory documents must be sent before due date of submission of online tenders

Bidder's Information

SI no.	Description	Details to be filled up by Bidder
1	Name1 (max. 35 char.)	
2	Name2 (max. 40 char.)	
3	Street/House No. (max. 50 char.)	
4	Street1 (max. 40 char.)	
5	Street2 (max. 40 char.)	
6	PIN Code (Postal Index No. e.g. "700001") (max. 6 char.)	
7	City/Place (e.g. "Kolkata" or "Dehradun") (max. 40 char.) or as the name of the city	
8	Country ("India" or "England" or as the name of country be)	
9	State (Name the state from where the office of Bidder operates)	
10	First Tel. No. (With STD Code): (e.g. 033-22225280 or 022-66552814) (max. 30 char.)	
11	First Fax No. (with STD Code)	
12	Contact Person	
13	First Mobile No.	
14	E-mail Address) (max. 40 char.)	
15	PAN No. :	
16	GSTIN Registration No. :	
17	GSP Name (GST Suvidha Provider)	
18	Bank Name (max. 60 char.)	
19	Street (max. 35 char.)	
20	City (max. 35 char.)	
21	Branch (max. 40 char.)	
22	IFSC Code	
23	MICR Code	
24	Account No.	
25	Type of Account (Current, Savings, etc.)	

LIST OF CONTENT:

UN-PRICED PART (PART I)

1. NOTICE INVITING TENDER
2. CONDITIONS OF CONTRACT
3. TECHNICAL SPECIFICATIONS
4. TECHNICAL DATA SHEETS
5. TENDER DRAWING

PRICED PART (PART II)

1. SCHEDULE OF WORK

NOTICE INVITING TENDER
Tender No. EP / AMTZ / CWH / FPS / 04

1.0 Balmer Lawrie & Co. Ltd. invite ONLINE BIDS from experienced, competent and resourceful Contractors with sound technical and financial capabilities for Supply, Installation, Testing & Commissioning of Fire Protection System at proposed Central Warehouse at AMTZ, Andhra Pradesh.

2.0 **SCOPE OF WORK**

The tender under reference covers supply, installation, testing, commissioning of Fire Protection System as per the notice inviting tender, condition of contract, technical specification, tender drawing & schedule of work and as per the satisfaction of the Engineer-in-Charge.

3.0 **COMPLETION PERIOD**

Time is the essence of the contract. The time schedule for total work according to the contract shall be **Three (3) months** from the date of placement of order or LOI whichever is earlier.

4.0 **EARNEST MONEY DEPOSIT**

Bid should be accompanied by a Demand Draft of **Rs 25000/- (Rupees Twenty Five Thousand only)** towards earnest money deposit (EMD) executed by any scheduled bank drawn in favour of M/s Balmer Lawrie & Co Ltd payable at Kolkata.

Earnest Money deposit (EMD) is exempted for agencies registered under NSIC or coming under the definition of Micro and Small Industries and holding valid registration certificates covering the tendered items/services. Declaration of Udyog Aadhar Memorandum (UAM) by the MSE parties on Central Public Procurement Portal (CPPP) shall be mandatory. However, attested/Notarized copy of valid NSIC certificate or "Micro and Small" industry certificate must be submitted in this regard.

4.1 For the successful bidder, the EMD will be refunded only after completion of the work. No interest shall be payable towards EMD amount.

4.2 For the unsuccessful bidders, the EMD will be refunded only after the successful bidder has accepted the work order and the acknowledgment of the same has been received by the owner.

4.3 EMD is liable to forfeiture in the event of:

- a) Withdrawal of offers during validity period of the offer
- b) Non acceptance of orders by the bidder within the stipulated time after placement of order.
- c) Any unilateral revision made by the bidder during the validity period of the offer.
- d) Non-performance of the bidder during the tenure of work.

- e) Bidders submitting false/fabricated/bogus documents in support of their credentials

5.0 **PRE-QUALIFICATION CRITERIA**

- 5.1 Average annual turnover of the tenderer shall be minimum of **Rs 60 lacs** during last three financial years ending 31st March, 2018 preferably in related business.
- 5.2 The tenderer should have successfully executed Fire Protection Systems during past seven years ending 31st March, 2018.
- 3 jobs each of value not less than **Rs 20 lacs** or
 - 2 jobs each of value not less than **Rs 25 lacs** or
 - 1 job of value not less than **Rs 40 lacs**

Copy of work orders and completion certificates / commissioning report from the owner/ consultant should be enclosed as supportive documents. Order copy issued by the owner to the consultant shall also be furnished if the completion certificate is issued by the consultant on behalf of the owner.

- 5.3 Tenderer should have PAN, GSTIN registration, PF registration, ESI registration (if applicable). Copy of the same shall be submitted along with techno commercial offer.

6.0 **TENDER DOCUMENTS**

Tender Documents comprises two parts viz. Part-I (Un-priced) and Part-II (Priced). The Un-priced Part consists of Notice Inviting Tender, Condition of Contract, Technical Specification and Drawings. The Priced Part consists of Priced Schedule. Bidders are requested to download the tender document and read all the terms and conditions mentioned in the tender document and seek clarification if any, from Sri G C Saha, AVP (E&P), Mob 9748773900, e-mail:saha.gc@balmerlawrie.com. Any clause defining offline bid submission in the tender document shall not be considered.

7.0 **TENDER SUBMISSION**

The intending tenderers shall be deemed to have visited the site and familiarise themselves thoroughly with the prevailing site conditions before submission of the tender. Non familiarity with the site conditions will not be considered reason either for extra claim or for not carrying out the work in strict conformity with the drawing, specification and time schedule.

The tenderer is required to register on the e-procurement site <https://balmerlawrie.eproc.in> and submit their bids online.

For registration and online bid submission tenderer may contact the following officials at the HELP DESK of M/s C1 India on browsing to the website <https://balmerlawrie.eproc.in> during business hours (10:00 a.m. to 06:30 p.m.) from Monday to Friday (Excluding holidays of the Company):

Mr TirthaDas (Kolkata)	tirtha.das@c1india.com	+91-9163254290	MON - FRI
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Mr Artha Ghosh (Kolkata)	partha.ghosh@c1india.com	+91-8811093299	MON - FRI
Mr CH. Mani Sankar (Chennai)	chikkavarapu.manisankar@c1india.com	+91-8939284159	MON - SAT
Ms Ujwala Shimpi (Mumbai)	ujwala.shimpi@c1india.com	+91-22-66865608	MON - FRI
Helpdesk Support (Kolkata)		+91-8017272644	MON - SAT
Escalation Level 1			
Mr.Tuhin Ghosh	tuhin.ghosh@c1india.com	+91-8981165071	

The tenderer shall authenticate the bid with his Digital Certificate for submitting the bid electronically on e-procurement platform and the bids not authenticated by digital certificate of the tenderer will not be accepted on the e-procurement platform.

All the tenderers who do not have digital certificates need to obtain Digital Certificate (**with both Signing and Encryption Components**). They may contact help desk of M/s C1 India.

The tenderer shall furnish the original Demand Draft for Tender fee and Demand Draft /BG for EMD to the tender inviting authority so as to reach on or before the due date and time of the Tender either personally or through courier or by post and the receipt of the same within the stipulated time shall be the responsibility of tenderer. The Company shall not take any responsibility for any delay or non-receipt. If any of the documents furnished by the tenderer is found to be false/fabricated/bogus, the tenderer is liable for black listing, forfeiture of the EMD, cancellation of work and criminal prosecution. The tenderer is requested to get a confirmed acknowledgement from the Tender Inviting Authority as a proof of Hardcopies submission to avoid any discrepancy.

The bidders found defaulting in submission of hard copies of original Demand Draft for Tender fees and Demand Draft / BG for EMD and other documents to the Tender Inviting Authority on or before the stipulated time in the Tender will not be permitted to participate in the Tender.

The bidder is requested to read all the terms and conditions mentioned in the tender Document and seek clarification if any from if in doubt from Sri A Boral.

The bidder should keep track of any Addendum / Corrigendum / Amendment issued by the Tender Inviting Authority on time-to-time basis in Company's website (www.Balmerlawrie.com) and e-procurement site (<https://balmerlawrie.eproc.in>). No separate newspaper advertisement shall be published for such Addendum / Corrigendum / Amendment etc. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.

The tenderer should complete all the processes and steps required for bid submission. The successful bid submission can be ascertained once acknowledgement is given by the system through bid submission number after completing all the process and steps. M/s C1 India is not responsible for incomplete bid submission by users. Tenderers may also note that the incomplete bids will not be saved by the system and are not available for the Tender Inviting Authority for processing.

Neither the Company (Balmer Lawrie & Co. Ltd.) nor the service provider (M/s C1 India) is responsible for any failure or non-submission of bids due to failure of internet or other connectivity problems or reasons thereof.

The hardcopies of the Bid Documents as explained above and also defined in clause no. 2.0 of Condition of Contract under sealed envelope should reach the office of Head (Technical), Balmer Lawrie & Co Ltd, Engineering & Projects Department, 21 Netaji Subhas Road, Kolkata 700001, on or before the due date of submission of tender. The Bidders who are submitting the Bids in person are requested to drop the same in our tender box located at the entrance of 2nd floor at the above address.

8.0 **SUPPLY OF MATERIAL**

All materials required for the work shall be supplied by the Tenderer.

9.0 **TAXES & DUTIES**

All materials required for the work shall be supplied by the Tenderer.

10.0 **PAN, GSTIN registration, ESI , PF registration**

Tenderers are required to submit PAN, GSTIN registration, Provident Fund registration and ESIC (if applicable) along with Un-priced part of their offer, failing which their offer may be liable to be rejected.

11.0 **INSTALLATION, COMMISSIONING & TRAINING**

The installation, testing and commissioning of the equipment/fire protection system shall be carried out by competent engineers/technicians of the Tenderer at the work site. After commissioning, the successful bidder's engineer / technician shall impart necessary training to Owner's personnel in operating and maintaining the installed fire protection system. No separate charge shall be payable by the Owner for the purpose.

12.0 **NON-CONFORMANCE**

Tenders not conforming to the above mentioned requirements are liable to be rejected.

13.0 **VALIDITY OF OFFER**

Tendered shall keep their offer valid for a period of 90 days from the date of opening of Unpriced bid.

14.0 QUANTITY VARIATION

The quantity as mentioned in the Schedule of Work/ Price Bid is indicative. The selected bidder/Contractor shall however ascertain the exact quantity required at site and supply and install accordingly. As the work progresses, it is possible that there will be quantity variations to any extent & omission of items. Specially, the quantity of booster pump, pipe, cables, misc civil work etc. may vary extensively based on detailed design requirement/site conditions. Under all such circumstances, the rates should be firm.

15.0 FIRM PRICE

The price should be firm and irrevocable and not subject to any change till the completion of Scope of Work.

16.0 RATES AND OTHER ENTRIES

- (a) The tenderer should quote for all items in the Schedule of Rates. If there is any discrepancy between unit rate and total amount, the unit rate will prevail.
- (b) The rates should be quoted in the same units as mentioned in the tender schedule of quantities.
- (c) All entries in the tender documents should be in ink / type. Corrections if any should be attested by full signature of the tenderer.
- (d) Every page of the tender document including annexure / enclosures shall be stamped and signed by the tenderer or his authorized representative thereby indicating that each and every page has been read and the points noted.

17.0 RIGHT TO ACCEPT OR REJECT TENDER

- 17.1 M/s Balmer Lawrie & Co Ltd reserves the right to accept or reject any or every tender without assigning any reason whatsoever / or to negotiate with the tenderer (s) in the manner it considers suitable. In the event of receipt of lowest price from more than one (1) bidders, fresh price bids shall be invited from the lowest bidders only to determine final lowest bidder for placement of order.
- 17.2 Bids of any tenderer may be rejected if a conflict of interest between the bidder and Company (Balmer Lawrie) is detected at any stage.
- 17.3 All the bids will be evaluated based on Pre-qualification and other criteria as mentioned in this NIT. Tenders of those bidders who are not meeting the pre-qualification criteria will not be considered for commercial evaluation.
- 17.4 Tender if submitted through e-mail or fax shall be summarily rejected.
- 17.5 Hard copy of Price Bid should not be submitted in the envelope containing Un-priced documents failing which the bid will be summarily rejected.

17.6 Clarifications /exceptions / deviations to the tender terms & conditions and specifications:

Balmer Lawrie & Co. Ltd. expects Tenderers to confirm compliance to tender terms & conditions and specifications, failing which the Tenderers are liable to be rejected. Hence all Tenderers in their own interest are advised to submit their bids in all respects confirming to all terms & conditions of the bid document.

Bids shall be evaluated based on the information / documents available in the bid. Hence Tenderers are advised to ensure that they submit appropriate and relevant supporting documentation alongwith their proposal in the first instance itself. Bids not complying the requirements of bid documents will be rejected without any further opportunity.

For any Technical clarifications / queries Tenderers are requested to contact from **Sri G C Saha, AVP (E&P), Mob 9748773900, e-mail:saha.gc@balmerlawrie.com.** (from 10.00AM to 05.00PM, Monday - Friday).

for **Balmer Lawrie & Co Ltd**

(A K Basak)
Head (Technical)

CONDITIONS OF CONTRACT

1.0 DEFINITIONS

The following expressions hereunder and elsewhere in the contract documents used shall have the following meanings respectively assigned to them namely,

- 1.1 The "Owner/Client" shall mean M/s **Balmer Lawrie & Co. Ltd**; a company incorporated in India and having its Registered Office at 21, Netaji Subhas Road, Kolkata - 700 001, and shall include its successors and assigns.
- 1.2 The "Project" shall mean "**Supply, Installation, Testing & Commissioning of Fire Protection System**" at **AMTZ, Visakhapatnam**.
- 1.3 The 'Engineer-In-Charge'/'Engineer' shall mean the Engineer /Officer authorised by the 'Owner' for the purpose of the contract for overall Supervision and Co-ordination of site activity and certification of billing.

2.0 DETAILS OF HARD COPIES TO BE SUBMITTED ALONG WITH THE TENDER

The tender, as submitted, shall consist of the following:

- (i) Hard copy of Un-priced Tender Document duly filled in, stamped and signed by the Tenderer as prescribed in different clauses of Tender documents. **No hard copy of priced bid shall be submitted.** Priced bid shall only be submitted online. **The price bid file in pdf format shall be downloaded from the website, bidder to fill in their item-wise rates & amounts on hard copy, stamp, sign, scan and upload the same.**
- (ii) Earnest money amounting to and in the manner specified along with the Un-priced bid.
- (iii) The Power of Attorney or authorisation, or any other document consisting of adequate proof of the ability of the signatory to bind the bidder, in original, when the power of attorney is a special "Power of Attorney" relating to the specific tender of Balmer Lawrie & Co Ltd only. A notarized true copy of the "Power of Attorney" shall also be accepted in lieu of the original, if the power of attorney is a general "Power of Attorney". However, photocopy of such notarized true copy shall not be accepted.
- (iv) Similar work done in past Seven years by the tenderer with copy of work orders and completion/commissioning certificate from the client/ consultant appointed by the client.
- (v) Audited annual reports for last three financial years.
- (vi) PAN / GSTIN / PF / ESI (if applicable).

- (vii) Any other documents required in terms of this tender.

3.0 RATES AND OTHER ENTRIES

- (a) The tenderer should quote for all items in the Schedule of Rates. Where discrepancy exists between the two, the rates expressed in words will prevail. Similarly if there is any discrepancy between unit rate and total amount, the unit rate will prevail.
- (b) The rates should be quoted in the same units as mentioned in the tender schedule of quantities.
- (c) All entries in the tender documents should be in ink / type. Corrections if any should be attested by full signature of the tenderer.
- (d) Every page of the tender document including annexure / enclosures shall be stamped and signed by the tenderer or his authorised representative thereby indicating that each and every page has been read and the points noted.

4.0 RIGHT TO ACCEPT OR REJECT TENDER

The Owner reserves the right to accept or reject any or every tender without assigning any reason whatsoever / or to negotiate with the tenderer(s) in the manner the Owner considers suitable. The work may be split up if considered expedient.

5.0 SECURITY DEPOSIT

- (i) On acceptance of the Bid, Bidder shall within fifteen (15) days, deposit with Owner an Initial Security Deposit of 5% of the Contract value (i.e. order value excluding taxes) and the same shall be in any of the following form:
 - a) Bank draft drawn on a Kolkata Branch of any Scheduled Bank in favour of Balmer Lawrie & Co Ltd.
 - b) Bank Guarantee executed by any Scheduled Bank as per proforma enclosed and shall be valid at least sixty days after the completion of work.
- (ii) If the Bidder fails to provide the Security Deposit within the period specified, such failure will constitute a breach of the Contract and Owner shall be entitled to award the Work elsewhere at Supplier's risk and cost. The EMD of the bidder to whom Contract was awarded, shall be forfeited
- (iii) No interest shall be payable against Security Deposit.
- (iv) As and by way of additional security, from every progress bill of Bidder, Security Deposit in the form of Retention Money (interest free) at the rate of 10% (inclusive of initial security deposit of 5%) of the Gross value of such bill as determined before

payment shall be retained by the Owner. Owner can permit Bidder to replace the Security Deposit / Retention Money so retained by Bank Guarantee at his discretion after successful completion of the work.

- (v) Wherever the Security Deposit / Retention Money is furnished by Bidder in any form other than in cash or Demand Draft, Bidder shall be entirely responsible to keep such form of security deposit enforceable by extending the validity thereof before one month of date of expiry and keep them enforceable, until released by Owner after the Defect Liability Period.
- (vi) The Security Deposit / Retention Money shall remain at the entire disposal of Owner as a security for satisfactory execution and completion of the Work(s). Owner shall be at liberty to deduct and appropriate from the Security Deposit / Retention Money such damages (liquidated or otherwise) and other dues and recoveries from Bidder under this Contract and the amount by which Security Deposit / Retention Money is reduced by such appropriations, will be made by further deductions from Bidder's subsequent bills to that extent as to make up the Security Deposit / Retention Money.
- (vii) Notwithstanding anything to contrary, in as much as the Security Deposit is to be in cash with Owner, Owner shall be entitled to enforce any of the approved forms of Security Deposit furnished by Bidder at any time and realise cash thereof irrespective of whether or not Bidder disputes such right. However, if Bidder obtains the extension of the time limit, if any, for the enforceability of such form of Security Deposit and intimates Owner of such extension within one month before expiry, Owner may not enforce such form of Security Deposit, unless it has otherwise become enforceable.
- (viii) On due and satisfactory performance of all the obligations of Bidder under this Contract including completion of work in all respects, carrying out the obligations of Bidder during Defect Liability Period, Retention Money shall be released by Owner subject to recoveries, deductions and retentions therefrom as provided under the Contract.

6.0 TESTING & INSPECTION

- (i) All materials required for the execution of the work should be new and should conform to applicable standard specification and approved by the Engineer-in-Charge before actually put to use. Commencement of work without prior approval shall be entirely at the risk and cost of the Contractor. No delay due to non-availability of the materials, tools, equipment etc. will be entertained by the Owner. In the case of certain Machinery / Equipment, the Engineer-in-Charge may inspect the item for approval, before they are brought to site.
- (ii) The Owner shall be entitled at all times at the risk of the Contractor to inspect and/or test by themselves or through any independent person(s) or agency (ies) appointed by the owner and/or to direct the Contractor to inspect and/or test all material(s), items

and components whatsoever supplied or proposed for supply, for incorporation in the work inclusive, during the course of manufacture or fabrication by the Contractor and/or at the Contractors work or otherwise, such materials or items or components. The inspection and/or test shall be conducted at the expense of the Contractor and if conducted by the Contractor may be directed by the Owner to be conducted by agency (ies) nominated by Owner and/or in the presence of witness (ess) nominated by the Owner.

- (iii) The Contractor shall furnish to the Engineer-in-Charge for approval when requested or as required by the specification or other contract documents, adequate samples of material intended for incorporation in the works. Such sample to be submitted before the work is commenced permitting sufficient time for tests, examination(s) thereto by the Engineer-in-Charge. All materials furnished and incorporated in the work shall conform to the sample(s) in all respects.
- (iv) The Engineer-in-Charge shall be entitled to reject at any time any defective materials, item or components, (including special manufactured or fabricated items or components) supplied by the Contractor for incorporation in the works.
- (v) The Contractor shall at all times ensure highest standard of workmanship, relating to the work to the satisfaction of the Engineer-in-Charge. The Engineer-in-Charge shall have the power to inspect the work as also to test or instruct the Contractor to test the works or any structure, material or component thereto at the risk and cost of the Contractor, either by the Contractor or by any agency(ies) nominated by the Engineer-in-Charge or Site Engineer on his behalf.
- (vi) The Contractor shall provide all facilities, instruments material / labour and accommodation required for testing the works (including checking the set time out of work) and shall provide Engineer-in-Charge all assistance necessary to conduct the test whenever and wherever required.
- (vii) The Engineer-in-Charge on inspection or test be not satisfied with the quality or workmanship of any work, structure, material, component (decision of the Engineer-in-Charge being final in this behalf), the Contractor shall re-perform, replace, re-install and / or re-erect as the case may be such work, structure material or component, as no such rejected work, structure, material, item or component shall be re-used without the prior permission of Engineer-in-Charge.
- (viii) Notwithstanding any provided in the foregoing clauses hereto and notwithstanding the Engineer-in-Charge/ or his representative has inspected tested and/or approved any particular work, structure, material or component, such inspection, test or approval shall not absolve the Contractor of his full responsibilities under the contract inclusive or relative to the specification, performance guarantee. The said inspection and test procedure being intended basically for satisfaction of the Owner / prima-facie

erection and/or material and equipment supplied for incorporation in the work is in order.

- (ix) On no account shall the Contractor proceed with the covering up or otherwise placing beyond reach of inspection or measurement any work before necessary inspection, entries are filled in the Site Inspection Register by the Engineer-in-Charge or his authorised representative. Should the Contractor do so the same shall be uncovered at the Contractor's risk and expense for carrying out the inspection and measurement. Measurement of Work shall be recorded as per the direction of Engineer-in-Charge.
- (x) If any tests are required to be carried out in connection with the work or materials or workmanship not supplied by the Contractor, such tests shall be carried out by the Contractor as per the instructions of Engineer-in-Charge and cost of such tests shall be reimbursed by the Owner.
- (xi) The owner reserve the right to inspect the Equipment at Tenderer's works by them or through a third party nominated by the Owner. Tenderer will provide all assistance to Owner's inspector in carrying out such inspection at Tenderer's works free of any charges.

7.0 PERFORMANCE GUARANTEE:

7.1 Performance Guarantee:

- a) The Contractor shall guarantee that the equipment and workmanship of work done and any fittings designed / manufactured / supplied by him are as specified in the tender schedule and wherever there is nothing specifically mentioned shall correspond to the best available grade and quality as required for the application.
- b) The Contractor shall also guarantee that the work done and any fittings designed, manufactured, supplied, erected shall be as per prevailing relevant standard, codes and statutory practices / stipulations.
- c) The Contractor shall **guarantee** the work done and any fittings designed, manufactured, supplied, erected and tested by him against defective materials, poor workmanship, improper design, operation inadequacies & problems and failure from normal usage, for a period of **12 (twelve) calendar months** after final acceptance of the work by the Owner. Performance Bank Guarantee shall be issued by any Nationalized / Scheduled Bank on basic value of material supplied and shall remain valid for above guarantee period.

7.2 Warranty:

The Contractor will repair and/or replace all defective parts, components / fittings, accessories etc. which shall be notified to them in writing within the Defect Liability Period

Promptly at free of cost. The Contractor will provide similar warranty on the parts, components, fittings, accessories etc. repaired and/ or replaced.

8.0 SITE PARTICULARS

The intending tenderers shall be deemed to have visited the site and familiarised themselves thoroughly with the site conditions before submitting the tender. Non-familiarity with the site conditions will not be considered reason either for extra claims or for not carrying out the work in strict conformity with the drawings and specifications.

9.0 SUPPLY OF MATERIAL

9.01 All materials required for the work shall be supplied by the Contractor. In addition, all materials required for temporary and enabling work shall be arranged and provided by the Contractor. All incidental expenses, loading, unloading, transportation, handling etc. shall be the responsibility of the Contractor and cost towards such expenses should be included in the finished item rates.

9.02 All other materials, as required to complete the works in all respects according to the contract rates shall be inclusive of all freights, GST and other taxes, duties, loading, unloading, transporting, handling and storage charges etc.

10.0 TIME FOR COMPLETION OF WORK

Time is the essence of the contract. The tenderer shall submit their plan to complete the whole work according to the overall time allowed for the execution of work as given in the Tender Documents and NIT.

10.0.1 The Contractor shall complete in all respects in accordance with the Contract, the entire work at each job site within the time specified in this behalf in the Time Schedule.

10.0.2 If the Owner so requires, the Progress Schedule in the form of CPM, giving the latest dates of starting and latest dates of finishing of various operations comprising the work as also the activities in the critical path and latest dates for achievement of specific milestones in respect of the work so as to complete in all respects the works (including testing and consequential operations) within the time provided in the Time Schedule. This Progress Schedule should also indicate the interlinking of the various activities and bring to light the specific/ critical items on which the inputs from the owner/ Engineer-in-Charge/ Consultant or other agencies, if any, would be required, to ensure adherence to the schedule.

10.0.3 If the Contractor shall fail to submit to the Owner/ EIC a Progress Schedule as envisaged above or if the Owner/EIC and Contractor fail to agree upon the Progress Schedule as envisaged above, then the Engineer-in-Charge shall prepare the Progress Schedule (the dates of progress as fixed by the Engineer-in-Charge being final and binding upon the Contractor except as herein otherwise expressed provided), and shall issue the Progress Schedule so prepared to

the Contractor, which shall then be the Approved Progress Schedule and all the provisions of clauses 10.0.2 shall apply relative thereto.

- 10.0.4 Any reference in the Contract Documents to the Approved Progress Schedule" or to the "Progress Schedule" shall mean the "Approved Progress Schedule" specified in clause 10.0.2 above or the "Progress Schedule" prepared and issued by the Engineer-in-Charge as specified in clause 10.0.3 above, whichever shall be in existence. In the absence of such approved Progress Schedule or such Progress Schedule prepared by the Engineer-in-Charge, the Progress Schedule first prepared by the Contractor (with incorporation of the Owner's / Engineer-in-Charge's comments thereon if any), shall until such approved Progress Schedule or such Progress Schedule prepared by the Engineer-in-Charge comes into existence, be deemed to be the Progress Schedule for the purpose of the contract.
- 10.0.5 Within 7(seven) days of the occurrence of any act, event or omission which, in the opinion of the Contractor, is likely to lead to delay in the commencement or completion of any particular work(s) or operation(s) or the entire work at any job site(s) and in such as would entitle the Contractor to an extension of the time specified in this behalf in the Progress Schedule(s), the Contractor shall inform the site engineer and the Engineer-in-Charge in writing of the occurrence of the act, event or omission and the date of commencement of such occurrence. Thereafter, if even upon the cessation of such act or event or the fulfilment of the omission, the Contractor in his opinion that an extension of the time specified in the Progress Schedule relative to the particular operation(s) or item(s) or work or the entire work at the job site(s) is necessary, the Contractor shall within 7 (seven) days after the cessation or fulfilment as aforesaid make a written request to the Engineer-in-Charge for extension of the relative time specified in the Progress Schedule and the Engineer-in-Charge may at any time prior to completion of the work extend the relative time of completion in the Progress Schedule for such period(s) as he considers necessary, if he is of opinion that such act, event or omission constitutes a ground for extension of time in terms of the Contract and that such act, event or omission has in fact resulted in insurmountable delay to the Contractor.
- 10.0.5.1 The application for extension of time made by the Contractor to the Engineer-in-Charge should contain full details of-
- a) The notice under clause 10.0.5 with a copy each of the notice sent to the Engineer-in-Charge and Site Engineer.
 - b) The activity for the Progress Schedule affected.
 - c) The bottleneck(s) or obstruction(s) perceived/ experienced, and the reason(s) therefor,
 - d) Extension required/ necessitated on account of c) above
 - e) Extension required/ necessitated on account of reasons attributable to the Owner,

- f) Extension required/ necessitated on account of force majeure reasons, and
- g) The total extension of time (if any) required/ necessitated for completion, taking the above into account and after eliminating all overlaps.

10.0.5.2 The opinion/ decision of the Engineer-in-Charge on this behalf and as to the extension of time necessary shall, subject to the provisions of clause 10.0.6 hereof, be final and binding upon the Contractor.

10.0.6 Subject as elsewhere herein or in the contract documents expressly provided, only the existence of force majeure circumstances as defined in 10.0.7 hereof shall afford the Contractor a ground for extension of time for completion of the work or any part of the work or any operation(s) involved therein, and specifically without prejudice to the generality of the foregoing, inclement weather, strike, shutdown, third party breach, delay in supply of material(s) or commercial hardship shall not afford the Contractor a ground for extension of time or relieve the Contractor of his/its full obligations under the Contract, nor will any forced shutdown or idleness or other impediment in progress or completion of the work due to any reason whatsoever afford the Contractor a ground for extension of time or relieve the Contractor of his/its full obligations under the Contract except and to the extent otherwise elsewhere herein specifically provided, nor shall any shut down or idle time charges be payable by the Owner to the Contractor for delay in the commencement, progress or completion of the work due to any reason whatsoever, including due to the existence of force majeure circumstances.

10.0.7 The term "Force Majeure" as employed in this contract shall mean wars (declared or undeclared) or revolutions, civil wars, tidal waves, fires, major floods, earthquakes, epidemics, quarantine restrictions and freight embargoes and transporters strikes affecting the country as a whole.

10.0.8 Upon an extension of the time for completion of the work or any part of the work or any operation(s) involved therein pursuant to clause 10.0.5 hereof, the extended date/time of completion shall be deemed to be the relative date of completion in the Progress Schedule, and such extension shall constitute the sole remedy of the Contractor for and/or arising out of such delays, and the Contractor hereby waives any and all contrary rights.

10.0.9 The mere fact that the Owner shall not have terminated the contract or that the Owner or Engineer-in-Charge has permitted the Contractor, for the time being to continue with the work for its completion shall not prejudice the full rights and remedies available to the Owner under the contract arising out of the delayed completion, including the right of Liquidated Damages and/or termination. Such permission(s) shall unless specifically stated to be an extension of time under clause 10.0.5, not be construed as extension(s) of time extension under clause 10.0.5, and shall merely constitute an indication or intimation, as the case may be, of the Owner's willingness, for the time being, to accept the delayed completion, subject to its rights under the contract.

10.0.10 No assurance, representation, promise or other statement by any personnel, engineer or representative of the Owner in relation to extension of time for commencement or completion of any work(s) or operation thereof or of the entire works under the contract shall be binding upon the Owner or shall constitute an extension of time for commencement or completion of the entire works or any part or operation thereof within the provisions of clause 10.0.5, unless the same has been communicated to the Contractor in writing by the Engineer-in-Charge under clause 10.0.5 and in writing specifically states that it embodies an extension of time within the provisions of clause 10.0.5, and without prejudice to the afore-going, the mere agreement or prescription or signing of a Progress Schedule by the site engineer or any site representative of the Owner at variance of the progress schedule, as the case may be, referred to in clauses 10.0.2, 10.0.3 and/or 10.0.4 hereof or containing an extended time of commencement or completion in respect of the entire work(s) or any part or operation thereof shall not anyway constitute an extension of time in the terms of the Contract so as to bind the Owner or relieve the Contractor of all or any of his liabilities under the Contract, nor shall constitute a promise on behalf of the owner or a waiver by the Owner of any of its rights in terms of the contract relative to the performance of the contract within the time specified or otherwise, but shall be deemed only(at the most) as a guidance to the Contractor for better organising his work on a recognition that the Contractor has failed to organise his work and/or perform the same within the time specified in the Progress Schedule established within the provisions of clause 10.0.2 or clause 10.0.3 or clause 10.0.4 hereof, as the case may be.

11.0 TAXES & DUTIES

Rates shall be inclusive of all taxes, duties etc. as applicable.

12.0 LIQUIDATED DAMAGE

- (i) If the Contractor is unable to complete the jobs specified in the scope of work within the period specified in NIT, it may request owner for extension of the time with unconditionally agreeing for payment of LD. Upon receipt of such a request, owner may at its discretion extend the period of completion and shall recover from the Contractor's running account bill, as an ascertained and agreed Liquidated Damages, a sum equivalent to **0.5%** of contract value for each week of delay or part thereof. The LD shall be limited to **5%** of the total contract value (order value excluding taxes).

The parties agree that the sum specified above is not a penalty but a genuine pre-estimate of the loss/ damage which will be suffered by the owner on account of delay/ breach on the part of the Contractor and the said amount will be payable without proof of actual loss or damage caused by such delay/breach.

- (ii) Notwithstanding what is stated in Clause above, the Owner shall have the right to employ any other agency to complete the remaining work at the risk and cost of the Contractor, in the event of his failing to complete the work within the stipulated time

or in the even progress of Contractor's work is behind schedule, as judged by the engineer-in-charge.

- (iii) Then the Engineer-in-Charge upon receiving necessary approval from competent Authority may in writing make a fair and reasonable extension of time for completion of the works as per provision of clause no. 10, provided further that the Contractor shall constantly use his best endeavour to the satisfaction of the Engineer-In-Charge to proceed with the works. Nothing herein shall prejudice the rights of the Contractor under clause herein above.
- (iv) The Contractor may seek time extension for delay or anticipated delay as per clause no. 10.0.5 for reasons not attributable to them and in such case time extension may be given without imposition of LD.

13.0 TERMS OF PAYMENT

- (i) No mobilization advance shall be paid to the Contractor.
- (ii) **60%** of the total rate against supply of materials upon receiving of materials at site in good condition and duly inspected and certified by the Engineer-in-Charge.
- (iii) **30%** of the total rate against successful installation upon verification and certification by the Engineer- in-Charge.
- (iv) **10%** of the total rate against supply successful commissioning and after issuance of job completion certificate by owner.
- (v) On each running account bill 10% of basic order value will be withheld as retention money. The Contractor shall, within fifteen (15) days, submit to the Owner Initial Security Deposit equivalent to 5% of the total contract value. During payment of monthly running account bills, the initial security deposit will be adjusted first against 'Retention Money', but in no case total retention including initial security deposit shall exceed 10% of the executed value of work at any stage. The retention money will be released after completion and acceptance of work against issue of Bank Guarantee of the equal amount for defect liability and performance maintenance period, which shall be twelve (12) months from the date of completion of job. Performance Bank Guarantee shall be issued by any Nationalized / Scheduled Bank on basic value of material supplied and shall remain valid for above guarantee period.
- (vi) Final payment shall be released based upon the measured installed quantity only.

14.0 ARBITRATION

Any dispute or difference arising under this Contract shall be referred under jurisdiction of Kolkata to a sole arbitrator to be appointed by the Chairman & Managing Director, Balmer

Lawrie & Co. Limited and the provisions of Arbitration Act, 1996 including any statutory modifications or enactment thereof shall apply to the Arbitration proceedings. The fees of the arbitrator, if any, shall be shared equally by both the parties. The award shall be a speaking award stating reason therefor and is final & binding on the parties. The proceeding shall be conducted in English language and courts at Kolkata will have exclusive jurisdiction to settle any dispute arising out of this contract.

15.0 EXTRA ITEMS OF WORK

During the course of execution of the work, should the Contractor come across items of work which are not covered under the Schedule of Rate or not included therein, the Contractor shall draw the attention of the Owner / Engineer-in-Charge to the same and such items of work shall be treated as extra only with the prior approval of Engineer-in-Charge in writing. Contractor shall submit a quotation along with the rate analysis for such accepted extra items before he commences work or purchases the materials in connection with such items.

For extra items, rates shall be derived from similar item rates included in the schedule of work. Where there is no such similar item available in the schedule, rate shall be analysed as follows:

Rate for extra item = Cost of material including transportation till site (a) + cost of labour inclusive of all necessary tools, tackles, equipment, machinery and consumable (b) required to carry out the work + 15% of (a+b) towards profit and overhead + taxes, duties etc.

16.0 RIGHT OF OWNER TO TERMINATE THE CONTRACT

(i) If the Contractor being an individual or a firm commits any 'Act of Insolvency' or shall be adjudged as insolvent or being an Incorporated Company shall have an order for compulsory winding up made against it, or pass an effective resolution for winding up voluntarily or subject to the supervision of the Court or shall be unable to carry out and fulfil the contract and to give security therefore, is so required by the Engineer-In-Charge.

Or if the Contractor (whether an individual, firm or incorporated company) shall suffer execution to be issued.

Or shall suffer any payment under this Contract to be attached by or on behalf of any of the creditors of the Contractor.

Or shall assign or charge, encumber or sublet this contract without the consent in writing of the Engineer-In-Charge first obtained.

Or shall charge or encumber this contract or any payments due or which may become due to the Contractor thereunder.

Or if the Engineer-In-Charge shall certify in writing to the Owner that the Contractor -

- a) has abandoned the Contract or
- b) has failed to commence the works, or has without any lawful excuse under these conditions, suspended the progress of the works for 14 days after receiving from the Engineer-In-Charge written notice to proceed or
- c) has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon or
- d) has used sub-standard or inferior material or materials not conforming to the specifications or has employed inferior workmanship in carrying out the works or part thereof or has not exercised due diligence in execution of the said work, or
- e) has neglected or failed persistently to observe and perform all or any of the acts, deeds, matters or things by this Contract to be observed and performed by the Contractor requiring the Contractor to observe or perform the same, or
- f) has to the detriment of good workmanship or in defiance of the Engineer-In-Charge's instructions to the contrary, sub-let or sub-contracted any part of the contract, or
- g) has failed to comply with the Engineer-In-Charge's instructions, or
- h) has in the opinion of the Engineer-In-Charge committed any breach of this Contract, then and in any of the said cases the Owner with the written consent of the Engineer-In-Charge may notwithstanding any previous waiver, after giving seven days' notice in writing to the Contractor terminate the Contract, but without hereby affecting the right of the Owner of the powers of the Engineer-In-Charge or the obligations and liabilities of the Contractor in respect of work, the contract shall continue enforce as fully as if the contract has not been so determined and the obligations of the Contractor in respect of work subsequently executed shall continue as if the works subsequently executed has been executed by or on behalf of the Contractor. And further, the Owner by its agents or servants shall be titled forthwith to enter upon and take possession of the works and all plants, tools, scaffoldings, sheds, machinery, steam and other power implements, machinery equipment and materials lying upon the site or the adjoining lands or roads and use the same as its own property and to employ the same by means of its own servants and workmen in carrying on and completing the work or by employing any other Contractor and the Contractor shall not in any way interrupt or do any act, matter or things to prevent, intimidate or hinder such other Contractor or other person or persons employed for completing and finishing or using the materials and plant for the work. When the works shall be completed or as

soon thereafter as convenient, the Engineer-In-Charge shall give a notice in writing to the Contractor to remove his surplus materials and plant and should the Contractor fail to do so within the period of 14 days after receipt thereof by him, the Owner shall sell the same either by public auction or a private sale and shall be given credit to the Contractor for the amount realized. The Engineer-In-Charge shall thereafter ascertain and certify in writing under this hand what (if anything) shall be due or payable to or by the owner, the expense or loss which the owner shall have been put to in procuring the works to be completed and the amount, if any, owing to the Contractor and the amount which shall be so certified, shall thereupon be paid by the owner to the Contractor or by the Contractor to the Owner, as the case may be and the Certificate of the Engineer-In-Charge shall be final and conclusive and binding on the parties hereto. In the event of termination under this Clause, the Owner shall not be bound by any provision of this Contract to make any further payment to the Contractor until the said works are completed.

- (ii) Owner shall, at any time, be entitled to determine and terminate the Contract, if in the opinion of the Owner the cessation of the Work becomes necessary owing to paucity of funds or for any other cause whatsoever, in which case the cost of approved materials at the Site at current market rates as verified and approved by Engineer-In-Charge and of the value of the Work done to date by the Contractor shall be paid for in full at the specified in the Contract. A notice in writing from the Owner to the Contractor of such determination and termination and the reason therefore shall be the conclusive proof of the fact that the Contract has been so determined and terminated by the Owner.
- (vii) Should the Contract be determined under sub-clause of this clause and the Contractor claims payment to compensate expenditure incurred by him in the expectation of completing the Work, the Owner shall consider and admit such claim as are deemed fair and reasonable and are supported by the vouchers to the satisfaction of the Engineer-In-charge. The Owner's decision on the necessity and propriety of such expenditure shall be final and conclusive and binding on the Contractor.

17.0 LABOUR LAWS

- (i) No Labour below the age of eighteen (18) years shall be employed on Work. In case female workers are engaged, requisite provisions shall be made as per the statute.
- (ii) Contractor shall not pay less than what is provided under law to labourers engaged by him on Work.
- (iii) Contractor shall at his expense comply with all labour laws and keep Owner indemnified in respect thereof.

(iv) In addition to above, rules and regulations as contained in Contract Labour (Regulation and Abolition) Act, 1970 will also be applicable for this contract. For the purpose of registration as per the above Act, Contractor may contact Owner for further details.

(v) Contractor shall secure full safety of the workers / employees engaged by him in the Site premises and shall take at his own cost, insurances and such other safety regulations for the said purpose.

18.0 INSURANCE

Contractor shall at his own expense carry out and maintain insurance with reputable companies to the satisfaction of the Owner as follows:

Employee's Compensation and Liability Insurance:

Contractor shall obtain Workmen Compensation policy in his name in respect of contractor's employees to be engaged for the work towards compensations as admissible under the Employee's Compensation Act, 1923 and Rules framed thereunder upon death/ disablement and also medical treatment of a worker and the same has to be produced to the Engineer-in-Charge before start of the work. Owner should be mentioned as the Beneficiary.

If any of the work is sublet, after necessary approval by the Owner, the contractor shall require the Sub-contractor to provide Employee's Compensation and Liability Insurance for the Sub-contractor's employees, if such employees are not covered under the Contractor's Insurance.

19.0 HSE REQUIREMENTS BY CONTRACTORS

Housekeeping

Contractors shall ensure that their work area is kept clean tidy and free from debris. The work areas must be cleaned on a daily basis. Any disposal of waste shall be done by the Contractor.

All equipment, materials and vehicles shall be stored in an orderly manner. Access to emergency equipment, exits, telephones, safety showers, eye washes, fire extinguishers, pull boxes, fire hoses, etc. shall not be blocked or disturbed.

Confined Space

Before commencing Work in a confined space the Contractor must obtain from Owner a Permit to Work, the Permit to Work will define the requirements to be followed.

As minimum Contractors must ensure the following:

- a) Confined spaces are kept identified and marked by a sign near the entrance(s).
- b) Adequate ventilation is provided
- c) Adequate emergency provisions are in place
- d) Appropriate air monitoring is performed to ensure oxygen is above 20%.
- e) Persons are provided with Confined Space training.
- f) All necessary equipment and support personnel required to enter a Confined space is provided.

Tools, Equipment and Machinery

The Contractor must ensure that all tools & equipment provided for use during the Work is:

- a) suitable for its intended use;
- b) safe for use, maintained in a safe condition and where necessary inspected to ensure this remains the case (any inspection must be carried out by a competent person and records shall be available);
- c) Used only by people who have received adequate information, instruction and training to use the tool or equipment.
- d) Provided with Earth leakage circuit breaker (ELCBs) at all times when using electric power cords. Use of electrical tape for temporary repairs is prohibited.

Working at Height

Any Work undertaken where there is a risk of fall and injury is considered to be working at height.

For any Contractor Personnel working at height, Contractors shall provide fall prevention whenever possible and fall protection only when fall prevention is not practicable. Before commencing Work in a height the Contractor must obtain from Owner a Permit to Work, the Permit to Work will define the requirements to be followed. Supervisor must be present at all point of time, to ensure no deviation occur during the course of work.

Fall Prevention System

Fall prevention systems (e.g. fixed guardrails, scaffolds, elevated work platforms) must provide protection for areas with open sides, including exposed floor openings.

Fall Protection Systems

Where fall protection systems are used then the Contractor must ensure the following is applied:

- (ii) Only approved full body harness and two shock-absorbing lanyards are used,
- (iii) Prior establishment of a rescue plan for the immediate rescue of an employee in the event they experience a fall while using the system,
- (iv) Anchorage points must be at waist level or higher; and capable of supporting at least the attached weight,
- (v) Lifeline systems must be approved by Owner before use.
- (vi) Use of ISI marked industrial helmet at all point of time.

Scaffolding

All scaffolds shall subject to a documented inspection by a competent person and clearly marked prior to use. The footings or anchorage for scaffolds shall be sound, rigid and capable of carrying the maximum intended load without settling or displacement. All scaffolding materials should be of MS tubular type.

Guardrails and toe-boards shall be installed on all open sides and ends of scaffold platforms. Scaffolds shall be provided with an access ladder or equivalent safe access. Contractor Personnel shall not climb or work from scaffold handrails, mid-rails or brace members.

Stairways and Ladders

Ladders should only be used for light duty, short-term work or access in line with the below and the Site Requirements.

- i) Fabricated ladders are prohibited.
- ii) Ladders will be secured to keep them from shifting, slipping, being knocked or blown over.
- iii) Ladders will never be tied to facility services piping, conduits, or ventilation ducting.
- iv) Ladders will be lowered and securely stored at the end of each workday.
- v) Ladders shall be maintained free of oil, grease and other slipping hazards

- vi) Ladders will be visually inspected by a competent person and approved for use before being put into service. Each user shall inspect ladders visually before using.
- vii) Ladders with structural defects shall be tagged "Do Not Use," immediately taken out of service, and removed from the Site by the end of the day.

Lifting Operations

Cranes and Hoisting Equipment

Contractors shall operate and maintain cranes and hoisting equipment in accordance with manufacturer's specifications and legal requirements.

Only Contractor Personnel trained in the use of cranes and hoists are permitted to use them.

Lifting Equipment and Accessories

All lifting equipment / accessories e.g., slings, chains, webbing, chain blocks, winches, jacks etc shall be indicated with their safe working load have an identification number visible on the unit and be inspected and tested in accordance with legal requirements.

Damaged equipment / accessories and equipment shall be tagged "out of use" and immediately removed from Site.

Lockout Tag out ("LOTO")

Prior to performing work on machines or equipment, the Contractor shall ensure that it is familiar with LOTO and Permit to Work procedures and that all of its affected Contractor Personnel receive the necessary training.

Barricades

Floor openings, stairwells, platforms and walkways, and trenching where a person can fall any distance shall be adequately barricaded and where necessary, well lit. Where there is a risk of injury from a fall then rigid barriers must be used.

Barricades must also be used to prevent personnel entering an area where risk of injury is high e.g., during overhead work activity or electrical testing etc. Such barricading must provide clear visual warning.

Compressed Gas Cylinders

Gas cylinder shall be securely stored and transported, and identified and used in line with the local requirements. Hose lines shall be inspected and tested for leaks in line with local requirements. Flash Back arrestor to be used to prevent any explosion due to back fire.

Electrical Safety

Prior to undertaking any work on live electrical equipment the Contractor must obtain a Permit to Work from Owner. Where ever possible live work should be avoided. Any control measures highlighted shall be implemented prior to work commencing.

The below measures will be taken:

- a) Work practices must protect against direct or indirect body contact by means of tools or materials and be suitable for work conditions and the exposed voltage level.
- b) Energized panels will be closed after normal working hours and whenever they are unattended. Temporary wiring will be de-energized when not in use.
- c) Only qualified electrical Contractor Personnel may enter substations and/or transformer and only after being specifically authorized by Owner.

Hot Works

A Permit to Work must be obtained from Owner prior to any hot works (welding, grinding, open flame work). Suitable fire extinguishing equipment shall be immediately available. Objects to be welded, cut or heated shall be moved to a designated safe location, or, if they cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place. Personnel working around or below the hot works shall be protected from falling or flying objects.

Prior to the use of temporary propane or resistance heating devices approval must be obtained from Owner.

Trenching, Excavating, Drilling and Concreting

A Permit to Work must be obtained from Owner and all underground lines, equipment and electrical cables shall be identified and located prior to beginning the work. The Contractor shall assign a competent Contractor Personnel to all trenching and excavation work.

Safe means of access and egress shall be located in trench excavations. Daily inspections shall be conducted by a competent Contractor Personnel for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems or other hazardous conditions.

Physical barriers shall be placed around or over trenches and excavations. Flashing light barriers shall be provided at night.

Environmental Requirements

Waste Management

The Contractor is responsible to remove any waste generated by the work being done on the Site. The Contractor must dispose of the waste in line with the relevant local legislative requirements. The waste disposal route shall be documented and made available for Owner to review at any time and may be subject to Owner's prior approval.

Wastes (includes rinse from washing of equipment, PPE, tools, etc) are not to be poured into sinks, drains, toilets, or storm sewers, or onto the ground. Solid or liquid wastes that are hazardous or regulated in any way are not to be disposed of in general site waste receptacles.

Spills

The Contractor is responsible for the provision of adequate spill kits/protection and the clean-up and disposal costs arising from such spills.

Emissions

The Contractor shall identify and quantify any emission sources associated with the Works. The control measures associated with these emission shall be subject to the approval of Owner's Emissions include but are not limited to noise, dust, fumes, vapours.

BANK GUARANTEE VERIFICATION CHECK LIST

<u>CHECK LIST</u>	<u>YES</u>	<u>NO</u>
I Does bank guarantee compare verbatim with standard Balmer Lawrie & Co Ltd proforma for BG	_____	_____
II. a. Has the executing officer of the BG indicated his name, designation and power of attorney No./ Signing Power No. etc. on BG	_____	_____
b. Is each page of BG duly signed/initialed by the executant and last page is signed with full particulars as required in the Balmer Lawrie's standard proforma of BG and under the seal of the Bank.	_____	_____
c. Does the last page of the BG carry the signature of two witnesses along side the signature of the executing Bank Manager	_____	_____
III. a. Does the non judicial stamp paper for BG purchase in the name of BG issuing Bank	_____	_____
b. Is the BG on non-judicial Stamp paper of value Rs. 100/- (Rupees One Hundred only)	_____	_____
c. Is the date of sale of non-judicial stamp paper shown on the BG and the stamp paper is issued not more than six months prior to date of execution of BG	_____	_____
IV. a. Are the factual details such as bid specifications No., LOI No., Contract price etc. correct	_____	_____
b. Whether over-writing/ cutting, if any on the BG authenticated under signature and seal of executant	_____	_____
V. a. Is the amount of BG in line with contract provisions / agreement /tender	_____	_____
b. Is the validity of BG in line with contract provisions / agreement /tender	_____	_____
VI. Covering letter from bank enclosed with the BG	_____	_____
VII. BG shall be from a Nationalised/ Scheduled Bank only	_____	_____

**PROFORMA OF THE GUARANTEE
BID BOND/ EARNEST MONEY DEPOSIT**

To
Balmer Lawrie & Co. Ltd.
Kolkata- 700 001

Whereas (Name of the bidder) (hereinafter called "the Bidder") has submitted its bid for the (purpose) (hereinafter called "the Bid") against Tender reference No. dated M/S. BALMER LAWRIE & CO. LTD., 21 Netaji Subhas Road, Kolkata – 700 001.

The conditions of Tender provide that the Bidder shall pay a sum of Rs..... (Rupees only) (hereinafter called "the said amount") as full Earnest Money Deposit in the forms therein mentioned. The forms of payment of Earnest Money Deposit include guarantee to be executed by a Scheduled Bank.

The said (name and address of the Bidder) have approached us and at their request and in consideration of the premises we, (Name of the Bank) having our office at(address of the Bank) have agreed to give such guarantee as herein after mentioned.

Know All Men by these presents, we,(name of the Bank) of(address of the Bank) having our office, inter alia, at (hereinafter called "the Bank") are bound unto BALMER LAWRIE & CO. LTD.....(address) (hereinafter called "the Purchaser") in the sum of Rs. (Rupees only) for which payment will truly be made to the Purchaser, the Bank binds itself, its successors and assigns by these presents this day of 2019.

THE CONDITIONS of this obligation are :

1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the bid form; or
2. If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity;
 - a) fails or refuses to execute the Contract Form if required; or
 - b) fails or refuses to furnish the Performance Security, in accordance with the instructions to Bidders.

Contd....2/-

[2]

We undertake to pay the Purchaser up to the said amount upon receipt of its first written demand, without the Purchaser having to substantiate their demand, provided that in their demand the Purchaser shall mention that the amount claimed by them is due owing to the occurrence of one or both of the two conditions.

This guarantee will remain in force upto (date of expiry) including the days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

Notwithstanding anything contained herein :

- i) Our liability under the Bank Guarantee shall not exceed Rs. (Rupees only)
- ii) This Bank Guarantee shall be valid upto
- iii) We are liable to pay the guaranteed amount or pay part thereof under this Bank Guarantee only if you serve upon us a written claim or demand on or before (last date of validity)

We, (name of the Bank) undertake not to revoke this guarantee during its currency except with your previous consent in writing.

We have power to issue this guarantee in your favour under our Memorandum and Articles of Association and the undersigned has full power to do and execute this Guarantee under the Power of Attorney dated day of 2019 granted to him by the Bank.

Your faithfully,

(Specimen Signature)

**BANK GUARANTEE
(PERFORMANCE)**

Letter of Guarantee No.

Dated : the day of

THE GUARANTEE is executed at Kolkata on the day of by
.....(set out full name and address of the Bank) (hereinafter referred to as "the Bank" which
expression shall unless expressly executed or repugnant to the context or meaning thereof mean and
include its successors and assigns).

WHEREAS Balmer Lawrie & Co. Ltd. (local address), an existing company
within the meaning of the Companies Act, 1956 and having its Registered Office at 21, Netaji Subhas
Road, Kolkata – 700 001 (hereinafter referred to as "the Company") issued a Tender being No.
dated (hereinafter referred to as "the said Tender") for (set out purpose of the job) and
pursuant thereto Messrs/ Mr. (set out full name and address of the
Contractor) (hereinafter referred to as "the Contractor" which term or expression wherever the
context so requires shall mean and include the partner or partners of the
Contractor for the time being/his/its heirs, executors, administrators, successors and assigns) (delete
which are not applicable) has accepted the said Tender and field its quotation.

AND WHEREAS the quotation of the Contractor had been accepted by the Company and in pursuance
thereof an Order being No..... dated (hereinafter referred to as "the said Order")
has been placed by the Company on the Contractor for (set out purpose of the job).

AND WHEREAS under the terms of the said Order the Contractor is required to furnish the Company
at their/his/its own costs and expenses a Bank Guarantee for Rs.....(Rupees
..... only) as performance guarantee for the fulfilment of the terms and conditions
of the said Tender and to do execute and perform the obligations of the Contractor under the
Agreement dated the day of (hereinafter referred to as "the Agreement ")
entered into by and between the Company of the one part and the Contractor of the other part, the
terms of the said Tender and the terms contained in the said Order which expression shall include all
amendments and/or modifications/or variation thereto.

AND WHEREAS the Contractor had agreed to provide to the Company a Bank Guarantee as security
for the due performance of their/his/its obligations truly and faithfully as hereinbefore mentioned.

Contd....2/-

[2]

NOW THIS GUARANTEE WITNESSETH as follows :

1. In consideration of the aforesaid premises at the request of the Contractor, we (set out the full name of the Bank) the Bankers of the Contractor shall perform fully and faithfully their/his/its contractual obligations under the Agreement dated the day of entered into by and between the Company of the one part and the Contractor of the other part, the terms and conditions of the said Tender and the said Order.
2. We, (set out full name of the Bank) do hereby undertake to pay to the Company without any deduction whatsoever a sum not exceeding Rs..... (Rupees only) without any protest, demur or proof or condition on receipt of a written demand from the Company stating that the amount claimed is due by way of loss and damage caused to or would be caused to or suffered by the Company due to bad workmanship or by reason of breach of any of the terms and conditions of the Agreement, the said Tender and the said Order hereinbefore mentioned.
3. The Guarantee is issued as security against due performance of the obligations of the Contractor or under the Agreement aforesaid and the said Tender and the said Order hereinbefore mentioned and subject to the conditions that our liabilities under this Guarantee is limited to a maximum sum of Rs..... (Rupees only) or the amount of loss or damage suffered or to be suffered by the Company in its opinion at any period of time, whichever is lower.
4. We, (set out full name of the Bank) further agree that the undertaking herein contained shall remain in full force for a period of months from the date of the satisfactory execution of the Contract.
5. This Guarantee shall not be affected by any amendment or change in the Agreement or change in the constitution of the Bank and/or the Company and/or the Contractor.
6. We (set out full name of the Bank) undertake not to revoke this Agreement during its currency except with the previous consent of the Company in writing.
7. All claim under this Guarantee must be presented to us within the time stipulated after which date the Company's claim/right under this Guarantee shall be forfeited and we,(set out full name of the Bank) shall be released and discharged from all liabilities hereunder.

Contd....3/-

[3]

8. This instrument shall be returned upon its expiry or settlement of claim(s) if any, thereunder.
9. Notwithstanding anything contained hereinbefore our total liabilities under this Guarantee shall not exceed a sum of Rs..... (Rupees only) and unless a demand or claim in writing under this Guarantee reaches us on or before the date of (last date of claim) and if no claim is received by us by that date all rights and claims of the Company under this Guarantee shall be forfeited and we,(set out full name of the Bank) shall be released and discharged of all our liabilities under this Guarantee thereafter.
10. We have power to issue this guarantee in your favour under our Memorandum and Articles of Association and the undersigned has full power to execute this Guarantee under Power of Attorney dated the day of granted to him by the Bank.

Place :

Date :

**PROFORMA OF THE GUARANTEE
(SECURITY DEPOSIT)**

Balmer Lawrie & Co. Ltd.
Kolkata- 700 001

Dear Sir,

That Messrs/Mr.(set out full name and address and constitution of the Contractor) (hereinafter referred to as "the Contractor") filed their/his/its quotation against your Tender being Tender No. dated (hereinafter referred as "the said Tender") for the work (set out the purpose of the job) and in pursuance thereto an Order being No. dated (hereinafter to as "the Order") was issued by you to the Contractor.

The conditions of the said Tender, inter alia, requires that the Contractor shall pay a sum of Rs..... only) as full security deposit (hereinafter referred to as "the security deposit") in the form therein mentioned. The form of payment of security deposit includes a guarantee to be executed by a Scheduled Bank.

The said Messrs/Mr. (set out full name of the Contractor) have/has approached us and at their/his/its request and in consideration of the premises We (set out full name of the Bank) having our office, inter alia at (state the address of the Bank) have agreed to give such guarantee in the manner following :

- 3 We, (set out full name of the Bank), hereby undertake with you if default is made by Messrs/Mr. (set out full name of the Contractor) in performing any of the terms and conditions of the Tender and/or in payment of the security deposit or any other or in payment of money payable to you. We, (set out full name of the Bank) shall merely on demand from you without demur or protest shall pay you the said amount of Rs..... (Rupees only) or such portion thereof not exceeding the said sum as you may demand from time to time.

2. We, (set out full name of the Bank), further agree with you that you hereunder to adopt any mode for realisation of your dues from the Contractor and/or to vary any of the Terms and Conditions of your Contract with the said Messrs/Mr. (set out full name of the Contractor), or to extend time of performance by Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by you against Contractor and to forbear or enforce any of the terms and conditions relating to the Contract and we, (set out full name of the Bank) shall not be relieved from our liability by reason of any such variation, or any indulgence to be given by you to the Contractor or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so releasing us.

Contd.....2/-

[2]

- 3. Your right to recover the said sum of Rs..... (Rupees only) from us in the manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes is/are pending before any Officer, tribunal, court or any other authority or authorities.
- 4. The guarantee herein contained shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the said Messrs/Mr. (set out the full name of the Contractor), but shall in all respect, and for all purposes be binding and operative until payment of all the money due to you in respect of such liabilities is paid,
- 5. Our liability under this guarantee is restricted to Rs. (Rupees only).
- 6. Our guarantee shall remain in force and effect until (set out the date of expiry) and unless a claim or demand in writing is made against us under this guarantee before the expiry of six months from the aforesaid date i.e. (set out last date of Claim period), the said Guarantee all your rights under this guarantee shall be forfeited and we, (set out full name of the Bank) shall be relieved and discharged from all liabilities thereunder.
- 7. We , (set out full name of the Bank) undertake not to revoke this Guarantee during its currency except with your previous consent in writing.
- 8. We, (set out full name of the Bank) have power to issue this Guarantee in your favour under our Memorandum and Articles of Association and the undersigned has full power to execute/sign this Guarantee under the Power of the Attorney dated the day of Two Thousand and Eighteen granted by the Bank.

Yours faithfully,

Dated : (Place)

.....(Date)

.....
 (Signature of Officer on
 behalf of)
 (Set out name of the Bank)

**TECHNICAL
SPECIFICATION**

FOR

**SUPPLY, INSTALLATION, TESTING & COMMISSIONING
OF FIRE PROTECTION SYSTEM**

FOR

**CENTRAL WAREHOUSE, AMTZ
VISAKHAPATNAM**

1.0.0 GENERAL

1.1.0 Intent of Specification

1.1.1 This specification is intended to cover residual engineering, supply, fabrication, erection, testing and commissioning of the fire-protection system, as per enclosed Schedule of Work, drawings and tender terms & conditions inclusive of the supply of all labour, supervision, tools, equipment and erection materials as necessary.

1.1.2 The specification shall be read in conjunction with the Conditions of Contract, Schedule of Work/Bill of Quantity as enclosed with this Specification. **However, in the event of any conflict between Schedule of Work/Bill of Quantity and Technical Specification or data sheets, item description mentioned in Schedule of Work/Bill of Quantity shall prevail.**

1.2.0 Standards & Codes

The complete supply and installation work for the equipment and accessories covered under this specification shall be designed, manufactured, erected, tested and commissioned in accordance with the latest IS. In cases where IS are not available, the equipment and accessories shall conform to the latest publication of recognized National Standard Institutions.

All fire-protection equipment and installation work shall also conform to National Building Code and local Fire Department. Fire Department and Fire Insurance Regulations as regards safety, earthing and other essential provisions specified therein for installation and operation of the systems.

Nothing in this specification shall be construed to relieve the CONTRACTOR of this responsibility.

2.0.0 SCOPE OF WORK

2.1.0 The details of various equipment relevant to the Fire Protection system have been elaborated in the subsequent sections of this document.

2.1.1 All equipment, materials, hardware and accessories to be supplied by the bidder shall be brand new ones and make specified in the technical data sheet. For other approved equivalent make, prior written approval of the owner shall be obtained for which detail technical document & Data sheet for all such items with make etc. shall be furnished along with application for owner review and acceptance.

- 2.1.2 All relevant drawings, technical data sheets and technical leaflets/catalogues, Test Certificates of major items shall be submitted.
- 2.1.3 Furnishing of all labour, skilled and unskilled, supervisory personnel, tools and tackles for fabrication/erection, testing equipment, implements, supplies, consumables and hardware for timely and efficient execution of the site work.
- 2.1.4 The item of work to be performed on all equipment and materials shall include but not be limited to the following:
Receiving, unloading of the materials at site
Opening, inspection and reporting all damages and short supply of items.
Arranging to repair and/or re-order all damaged and short supply items.
Storing at site with suitable all weather protection.
Side-Shifting of materials as directed by Engineer-in Charge
Assembly, erection and complete installation.
Necessary co-ordination between works done by the other contractors.
Final check-up, testing and commissioning in presence of owner's representative.
Trial run for seven days, rectification of defects, if any and adjustment as necessary.
- 2.1.5 Field modification carried out shall be marked up red on one set of drawing. Based on the mark up, as built drawing will be prepared.
- 2.1.6 Preparation of cable schedule for Fire Detection & Alarm System
- 2.1.7 Preparation of AS BUILT DRAWINGS and submission of the same in soft copies (in Auto cad 2004 / Microsoft Word/excel format) as well as in hard copies.
- 2.1.8 Reference shall be drawn to the "Schedule of Work" for quantity of major items.
- 2.1.9 Contractor will be given a place (only) for storing his materials, tools, tackles. Contractor shall construct a store (at his own cost) at that designated place to keep his materials, tools & tackles. Contractor shall make proper security arrangement for his materials till the installation is taken over by the owner. Owner will not be responsible for any theft/loss of materials.

2.1.10 Construction power and water: Contractor shall arrange for water and construction power at his own cost. However, if power is available during execution same may be provide to the contractor on chargeable basis.

3.0.0 TESTS

3.1.0 Pre-commissioning Tests at site

3.1.1 The installation work shall be tested by the contractor after completion of his erection/installation work with an advance notice to the engineer so that he or his authorized representative may witness the same also.

The contractor shall carry out Test as per relevant codes & standards and record the same in proper format. All piping after installation shall be tested for a hydrostatic test pressure of 16 Kg/Sq cm maintained for 24 hours. All joints and valves shall be checked for leaks and rectified and retested. During testing all valves except drain & air valves shall be kept fully open. After completion of the tests, the recorded test results shall be submitted to the owner for his approval and acceptance.

3.1.2 The test result of any installation or equipment or its part, if considered not satisfactory to the engineer, the concerned installation / equipment and its accessories shall be properly rectified by the contractor and shall be tested again to the satisfaction of the engineer by the contractor at his own cost.

4.0.0 DESIGN BASIS

4.1.1 Proposed hydrant system for the central warehouse is an extension of the ring main laid by AMTZ. AMTZ will provide a tapping of 6 inch for supply of pressurized fire water to Balmer Lawrie's (BL's) premise. Accordingly, water storage & pumping system is not required to be installed by BL.

4.1.2 However, as the plot allotted to BL is located at the furthest corner, an online booster pump have been considered for increasing the water pressure. However, this booster pump will only be installed after confirming the pressure from AMTZ Authority.

4.1.3 Open Area: Around the periphery of the warehouse along the Boundary wall, hydrant network has been considered with SH hydrant at 30 mtr. interval. Water Monitors have been considered at two corner location of the plot.

4.1.4 Warehouse:

- a) Inside the warehouse, beam smoke detectors have been considered as it is impractical, inappropriate and not cost effective to use traditional point-type detectors for this type of warehouse.
- b) Manual alarm call points along with Hooters are proposed near rolling shutter location for the purpose of raising an alarm manually once verification of a fire or emergency condition exists.
- c) Fire Escape Hydrants with Hose Box and Hose Reel has been are provided for fighting fire.

4.1.5 Office Room:

- a) Smoke Detectors (only below false ceiling level) have been provided in office rooms
- b) Pendant Quartzoid Bulb type spray water sprinkler system has been considered for office rooms.
- c) Main Fire Alarm Control Panel which will indicate the precise location of fire.

4.1.6 Hooter cum strobes will be installed such as to alert people uniformly all over the area covered under FDA system in case detection of fire.

4.1.7 Manual Call point will be placed at suitable locations

4.1.8 Portable Fire Extinguishers (CO₂, ABC , DCP Type) as per IS: 15683 has been considered.

4.1.9 Fire Notice Boards, Signages will be displayed as required.

4.1.10 Fire Brigade inlet connection has been provided near entry gate to overcome emergency situation.

5.0.0 FIRE HYDRANT SYSTEM

5.1.0 Without restricting to the generality of the foregoing, the fire hydrant system shall include the following:

5.1.1 Booster Pump, suction / delivery pipes, Valves, control panel and Instrumentation.

5.1.2. Mild Steel Iron (M.S.), ERW, Black (Heavy Grade) Pump house / Mild Steel Iron (M.S.), ERW, Black Class "C" (Heavy Grade) / ring mains / riser main within the building and as well outside the building.

5.1.3 Landing valves, external hydrant valves, hose reels, Hose cabinets, fire brigade connections and connections to pumps and appliances as required.

5.1.4 All materials shall be of the best quality and brand new, conforming to these specifications / standards and subject to the approval of the Client / consultant.

5.1.5 Pipes shall be fixed in a manner as to provide easy accessibility for repair and maintenance and shall not cause obstruction in shafts, passages etc.

- 5.1.6 Pipes and fittings shall be fixed to walls and ceilings by suitable clamps at intervals specified. Only approved types of anchor fasteners shall be used for RCC ceilings and walls.
- 5.1.7 Pipes and fittings shall be fixed truly vertical, horizontal or in slopes as required in a neat manner. The pipes shall be supported by structural steel fabricated (like, channel / angle / flat / plate etc.) supports with suitable anchor fasteners / suspended thread rods not less than M16 in size.
- 5.1.8 Valves and other appurtenances shall be as located that they are easily accessible for operation, repairs and maintenance. Valves / other equipment fitted above the false ceiling shall be provided with trap / access doors.
- 5.1.9 Pipes for wet risers within the Building shall be M.S. tubes conforming to IS 1239 (Heavy 'C' class) with flanged/welded joints.
- 5.1.10 Fittings for steel pipes shall be malleable iron or forged iron fittings with screwed / welded joints.

5.2.0 PIPING

All pipes inside the building and where specified, outside the building shall be M.S. conforming to IS: 1239 - Heavy. Pipes 200 mm dia. and above shall be M.S. as per IS: 3589 with minimum 6 mm wall thick & fittings shall be fabricated from pipes confirming to IS 3589. Pipes shall be carefully laid to the alignment, levels and gradients and great care shall be taken to prevent any sand, earth or other matter from entering the pipes during laying. Pipes shall be kept thoroughly clean during the course of laying. The ends of pipes shall be blocked with wooden plugs wedged home, at the end of each days work to prevent dirt and rodents, insects etc., entering the pipe.

Pipes up to 50mmdia, tapered screwed / Socket welded / Butt welded type jointing shall be adopted, while for pipes above 50mmdia welded or flanged connections shall be used. Flanged joints shall be made with 3 mm thick insertion rubber washer / Gaskets. All bolt holes in flanges shall be drilled & making hole by using gas cutting is not acceptable. The drilling of each flange shall be in accordance with relevant Standards provided in Data Sheet.

Flanged joints shall be used for connections to vessel, equipment, flanged valves and also on suitable straight lengths of pipeline at strategic points to facilitate erection and subsequent maintenance work. The Bolts /Nuts / Washers used in the system shall be in accordance with relevant Standards provided in Data Sheet.

5.2.1 PIPE PROTECTION

5.2.1.1 ABOVE GROUND PIPES

All pipes above ground and in exposed locations shall be painted as follows,
Surface Preparation: As per data sheet.

5.2.1.2 UNDER GROUND PIPES

The pipes (buried) should be initially brushed to remove all foreign matter and apply the primer over the pipe. Primer is allowed to dry until the solvent evaporates and surface becomes tacky. The tape 4mm thick and 150/250mm wide shall then be wound in a spiral fashion and bonded completely to pipe by thermo fusion process. The overlap is to be maintained at 15mm.

5.2.3 PIPE SUPPORTS

Concrete blocks are to be made for supporting the ring main to be laid along the wall. Supports for above ground pipes of 65mm dia and above shall be fabricated by structural steel of suitable sections with suitable fasteners. The supports shall be painted with coats as mentioned in the data sheets. Suitable type hangers shall support pipes below 50 mm dia with clamps, anchor fasteners and suspended rods etc.

5.3.0 VALVES

5.3.1 BUTTERFLY VALVES

Butterfly valves shall be as per BS 5155 & provided for pipes 50mmdia and above on downstream (delivery side) of the pumps. The valves shall be CI construction, seat shall be black nitrile rubber with in situ molding. The valves shall be PN 1.2 rating. All valves shall be connected with supervisory switch for monitoring at Fire alarm panel. Cabling shall be measured and paid under Fire alarm system.

5.3.2 NON – RETURN VALVES

Non – return valves shall be reflux swinging disc type with C.I. body and bronze / brass internals as per Technical data sheet enclosed and as per IS: 5312.

5.4.0 HOSE REEL

Hose reel shall be swinging type for 180 deg with mounting base plate. Hose reel shall consist with 19mm dia high-pressure rubber braided hose of 30M length with gunmetal nozzles. Hose reel water shall be tapped off from the wet riser with Ball valve. The hose reel shall be installed in fire hose duct inside the building.

5.5.0 HYDRANT VALVE

The Hydrant valve shall be gunmetal single headed type conforming to IS: 5290 complete with hand wheel, quick coupling, spring and blank cap. 2 Nos. of RRL type hose pipe of 63mmdia and 15M length as per IS: 636 with 63mmdia instantaneous type SS heavy duty couplings & SS Branch pipe and nozzle to be provided. Fire hoses and branch pipes shall be mounted inside the fire shaft with suitable supports.

5.6.0 FIRE HOSE

Fire hoses shall be Reinforced Rubber Lined (RRL) type as per IS: 636 & 63mmdia and 15M long. Hoses shall be bounded by G.I. wire to heavy-duty instantaneous gunmetal couplings as per IS 903.

5.7.0 BRANCH PIPE & NOZZLE

Branch pipe shall be gunmetal, 63mmdia with Nozzle of 19mmdia made as per IS: 903 and suitable fitted with hoses as specified elsewhere in this specifications.

5.8.0 HOSE CABINET

Hose cabinet shall be fabricated by CRC sheet 18swg and size shall be 750mm x 600mm x 250mm. Hose cabinet shall have glass fronted door fitted with 4mm thick clear glass & powder coated finish of red outside & white inside. Cabinet shall be suitable for stand mounting / wall mounted as specified in Schedule and shall have built in breakable glass type feature to keep key.

5.9.0 FIRE BRIGADE INLET CONNECTION (FBIC)

FBIC shall be as per IS 5131 & gunmetal four away connecting head with 4 x 63mmdia instantaneous type inlets with built in check valve and 150mmdia outlet connection to the fire main grid with 150mmdia Butterfly valve and non – return valve. The fire brigade inlet shall be feed water in to the system as well as to the fire water tank.

5.10.0 AIR RELEASE VALVES

Air release valve is 25mm screwed inlet GM single acting type and shall be fixed on all high points in the system (wet riser) with Ball valves or as shown on drawings.

5.11.0 DRAIN VALVES

Gun metal Gate / Ball valve of 15 / 25 / 40 / 50mmdia as per IS; 778 with fittings as required for instruments / draining any water in the system / Risers in low points.

6.0.0 Fire Detection & Alarm System

The scope of work consists of Supply, Installation, Testing, Commissioning & handing over the Micro Processor based Fire Alarm System as detailed in the following specifications, Schedule of Work and the drawing.

6.1.0 General Description

The Fire Alarm System shall be two wires, electrically supervised including Manual Call Points, automatic detectors, and alarm sounding devices, Fire Alarm Control Panel, power supply, batteries and wiring.

Upon actuation of an automatic detector, visual and acoustic signaling at the main fire alarm control panel shall indicate the address where acknowledgement by the operator shall cancel the acoustic signal only. Two types of alarm sound shall be required.

The evacuation signal should be continuous and the alert signal should be intermittent. Provisions shall be made for changing the "Alert" signal to "Evacuation" signal in any sector panel manually.

After an alarm has been initiated it should continue until normal conditions have been restored. Manually operating silencing devices shall be provided for transferring or limiting the alarm to a control sounder. The operation of the silencing device should not cancel the visual indication until a reset operation is provided after the alarm condition has been restored. Automatic silencing of alarm shall not be used. The complete system shall be suitable for operation a 24 V, DC supply with all necessary batteries, battery charger, etc. All parts, components and accessories necessary for the complete installation shall be provided.

The wiring for the Fire Alarm System with the building shall be with armoured copper cables with all necessary terminations and wiring accessories. The number of junction boxes shall be kept to the minimum. Where junction boxes are required, equivalent insulating material sleeves shall be used for the wiring in the junction boxes. PVC cables shall be rated at 1100 V as per the latest IS.

6.2.0 Fire Alarm Control Panel

The Main Fire Alarm Control Panel shall have the following features. The Main Fire Alarm Control Panel shall be microprocessor based flush / wall mounting type and shall be suitably located as per the direction of Engineer-in-Charge. It shall be constructed of MS sheet (powder coated) (16 SWG) with multi character LCD display and lockable door.

The Main Fire Alarm Panel shall work on 230 Volts A.C. 50 Hz, 1 phase. The Main Fire Alarm Panel shall be capable of working on batteries also i.e., (24 Volts D.C.) maintenance free batteries of specified make. The FACP shall have its own Battery Backup of a minimum of 48 hours in normal run and then 30 minutes in alarm condition. The back up time calculation

shall be done as per IS 2189 standards. The Battery shall be 2*12V (24V) DC and of sealed lead acid rechargeable maintenance free type. Whenever the A.C. Power fails, the batteries shall automatically take over the system, thus operating the system 24 hrs. a day. There shall be 2 Nos. of 12 Volts batteries supplied along with the panel and shall be accommodated in a proper enclosure.

The Main Fire Alarm Panel shall sound whenever fire/ fault occur. Whenever 'Fire' Signal comes, panel hooter shall sound with wailing sound and whenever 'Fault' signal comes the panel shall sound continuously i.e., the audio sound produced shall be differentiated between Fire / Fault signal.

The panel shall be capable of handling multiple alarms with alarms in queue displayed. The panel shall have multi-character LCD display interface to display all events, menu driven software to program the zone details of sector panels and a programmable keypad to enter the zone description. Any Fire / Fault in any zone of the sector panel shall be annunciated in English language description of the event with date, time, panel number, zone number & description of alarm/trouble and zone details.

It shall be capable of being networked with the sector panels located at different part of the premises through a single multi-drop RS485 data bus.

6.3.0 Photo Electric Smoke Detectors (PED)

PED shall be of surface / flush mounted solid state, operating on the principle of photoelectric detection of light scattered by smoke particles. The sensor shall be of silicon photocell. PEDs shall be Analog intelligent addressable with programmable addressing feature. The detectors shall be of Soft Addressing Feature; hence the Fire Alarm Control panel shall automatically and sequentially assign an address to the detectors. The detector chamber shall be protected with a continuous precisely perforated screen, which eliminates even the small insects to penetrate inside the smoke chamber.

Detectors shall be provided with blinking bi-colour LED to visually indicate the healthiness of the detector / alarm condition. Detectors shall be suitable for an operating temperature -30° C to 70° C and relative humidity of 0% to 95 % (non-condensing). The detector shall have inbuilt intelligence to detect the fire conditions via the inbuilt algorithms in the microprocessor, as well shall have the inbuilt intelligence to detect software and hardware faults or malfunction as well if double addressing is assigned by mistake on the loop.

PEDs shall be with In-built short circuit isolator in each device for avoiding multi-device failures in case of short circuit in loop cable. The detector can support independent output from the base which can be used for Remote LED, which can be assigned from the Fire Alarm Control Panel. Each detector will be complete with an interchangeable mounting base that includes a terminal box into which the detector can be plugged in. Also there shall be an

external terminal box to terminate the field cable. The base for the detector shall be from the same manufacturer of the detector and should be imported. This detectors/base shall be traceable to manufacturer's batch certificate. Detectors shall be suitable for a supply voltage of 15 to 40 V DC without affecting the sensitivity.

6.4.0 Manual Call Points

The unit must be intelligent analogue addressable manual call point. Fully complying with EN54 11 and can be connected on the same two core loop and loop powered. The device shall be equipped with the latest state of the art microprocessor which shall hold the fire algorithms, hardware and software monitoring capability. The microprocessor shall have the intelligence to announce the alarm directly to the fire alarm control panel in case if the MCP is called for alarm. This process shall not take more than 2 second in total. The unit shall be embedded with protocol for safe and fast communication between the device and the Fire Alarm Control Panel, The Microprocessor shall allow Soft Addressing Features; this allows the Fire Alarm Control.

6.5.0 Hooters

The Electronic Hooters shall be housed in MS enclosure of 1.5mm sheet metal. The Hooters shall be with built on oscillator & amplifier. The Hooters shall give two tones, wailing sound whenever it receives 24 V supply from panel on receipt of Fire signal. The range of Hooter shall be 85db approx. at 1 mtr. The MS box shall be painted with Fire Red (Powder Coated). Hooter shall be of wall / ceiling mounted to suit the interiors.

6.6.0 Power Supply

The Main Control Panel/ Sector panel shall be provided with operating power from 240 V,50 Hz single phase AC source. This power shall be converted into 24 VDC for system operation by a power supply unit. In the event of failure of the operating supply, the system shall be automatically transferred to standby battery supply. The batteries shall be of the maintenance free type and shall be housed in an appropriate housing, well as trickle charging and shall have sufficient capacity to operate the system with A.C. power disconnected for 48 hours and at the end of this period to operate all alarm sounding devices simultaneously with loads caused by operation of detectors operating on 25% of the zone circuits of the system with a minimum of two zones for a period of 30 consecutive minutes. Interconnecting wiring between Fire Alarm Control Panel and batteries shall be supervised for open and short circuit conditions. Batteries shall also be supervised for an under voltage condition.

Alarm receiving and alarm signaling circuits shall be of two wire system and the system shall be partly with armoured cu cable.

LIST OF APPROVED MAKE

Sl. No.	Item Description	Preferred Make
1	Cable & Wires	: CCI/ RPG Asian/ Universal/Fort Gloster/ Nicco Torrent /Finolex/ Polycab/ Havells/RR
2	Pump	: Mather & Platt / Kirloskar
3	Engine	: Greaves / Cummins/Kirloskar
4	Motor	: Crompton /Kirloskar/ ABB / Bharat Bijlee /equivalent approved make (E.A.M)
5	Gate Valves	:KBL/H sarkar / Fluid Control /Upadhya/ Kalpana/ (E.A.M)
6	Pipes	: Tata / Jindal /SAIL / (E.A.M)
7	Pressure Switch & Gauge	: ANI/H Guru/Waree/Wika/Indfoss/ Pricol/Fiebig(E.A.M)
8	Control Panel Component	: ABB / Universal / Khatau Junkar/L&T/ (E.A.M)
9	Relays	: Alstom / ABB / Siemens / GE / (E.A.M)
10	Hydrant valve & water monitor, Branch Pipe with Nozzle	:GEI / Newage / Shah Bhogilal / ASCO/Fire Shield/Sh Fire(E.A.M)
11	Non- Return Valves	: KBL/ H sarkar / Fluid Control /Upadhya/ Kalpana/ Venus/ Hawa/ InterValve / (E.A.M)
12	Butterfly Valves	: KBL/H sarkar / Fluid Control /Upadhya/ Kalpana/ Venus/ Hawa / (E.A.M)
13	Pipe Fittings	: Bharat Forge/ Tube Products/M.S. Fittings/ Sanjay Forge/ VS Brand/ (E.A.M)
14	Gate Valves, screwed end	: Leader/Zoloto/ITAP/ Hawa (E.A.M)
15	Ball Valves, screwed end	: Leader/Zoloto/ITAP/ Hawa (E.A.M)

- | | | |
|-----|--|--|
| 16 | Strainer | : Gujrat OTO Filt/ Grand Prix/Tel Flow/ Jaypee/H Sarkar (E.A.M) |
| 17 | PI | : Fiebig/H Guru / Pricol/ Waree/ (E.A.M) |
| 18 | Anti Corrosive Material | : IWL/ Rustech/ (E.A.M) |
| 19 | Fire Hose & Hose Coupling | : Newage / CRC/ GEI/BRG/Fire Shield(E.A.M) |
| 20 | Air Release Valve | : Leader/ Bajaj/ Hawa/ (E.A.M) |
| 21 | Welding Electrodes | : ESAB/ ADVANI/Best Arc/ (E.A.M) |
| 22. | FDA Parts such as detectors , RI , MCP, Fire Alarm Panel, Modules etc. | : Apollo / Edwards / Honeywell/Bosch |
| 23. | Steel | : SAIL/RINL/TATA/JINDAL/ESSAR/BHUSAN |
| 24. | Isolation Control Valve (ISI) | :Safe Spray/HD |
| 25. | Sprinkler head (UL Listed) | :HD/Viking/Tyco |
| 26. | Paint | :Berger/Asian Paints/Nerolac/ CDC Carboline/ Jenson & Nicholson/ Shalimar Paints/Bombay Paints |

Besides above mentioned make **equivalent approved make (EAM)** may also be used. The Contractor shall also obtain prior approval from Owner for the 'Make' and 'Rating' of any other major item not mentioned above.

TECHNICAL DATA SHEETS (Attached)

INDEX OF DATA SHEETS

Document No.	Title
AMTZ/FPS/1	Branch Pipe & Nozzles
AMTZ/FPS/2	Fire Hose with couplings
AMTZ/FPS/3	Hose Box
AMTZ/FPS/4	Landing / Hydrant
AMTZ/FPS /5	Water Monitor
AMTZ/FPS / 6	Pressure Gauge
AMTZ/FPS /7	Pipe fittings, flanges etc.
AMTZ/FPS /8	CI Gate Valves
AMTZ/FPS /9	CI Non Return Valves
AMTZ/FPS /10	Wrapping & Coating material
AMTZ/FPS/11	Painting of Piping, Equipment & Structure
AMTZ/FPS/12	Sprinklers
AMTZ/FPS/13	Flow Switch
AMTZ/FPS/14	Flexible Hose for Sprinklers
AMTZ/FPS/15	FRLS Cable

TITLE :		DOC NO.	AMTZ/FPS/01		
TECHNICAL DATA SHEET FOR BRANCH PIPE & NOZZLES		REV.	0	DATE:	04-06-2019
PACKAGE: FIRE PROTECTION SYSTEM		SHEET	1	OF	1
PROJECT: Central Warehouse at AMTZ, Vizag					
1.0	Manufacturer	SHAH BHOGILAL / NEWAGE / GEI / ASCO / : Fire Shield/ Equivalent Approved			
2.0	Code & Standard				
2.1	Branch pipe	: IS:903 & IS:2871			
2.2	Nozzle	: IS:903			
2.3	Type	: Solid stream type (For areas except Universal Type (Only for transformer yard)			
2.4	Size (Branch pipe & nozzle)				
	Inlet	: 63 mm dia			
	Outlet	: 20 mm dia			
2.5	End Connection	: Instantaneous Male			
3.0	Material of Construction				
3.1	Branch pipe	: SS to IS:3444 Gr. 01			
3.2	Nozzle	: SS to IS:3444 Gr. 01			
3.3	Washer	: Rubber to IS : 937 Type 2 B			
3.4	Quick coupling end / Hose coupling	: Fire Hose Coupling (By Hose Supplier)			
4.0	Hydrotest Pressure	: 21 Kg/cm ²			
5.0	Above items accepted by TAC	: Yes			
6.0	Quantity	: As per Approved drawings			

TITLE :	TECHNICAL DATA SHEET FOR FIRE HOSE WITH COUPLINGS	DOC NO.	AMTZ/FPS/02		
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	Central Warehouse at AMTZ, Vizag	SHEET	1	OF	1
1.0	Manufacturer	NEWAGE / Fire Shield / BRG / CRC / GEI / Equivalent approved			
2	Confirms to IS Code	: IS:14933-2001 together with end GM couplings (ISI Marked). The general design and construction of instantaneous end couplings,			
3	Type	: As per IS:14933-2001			
4	Quantity	: As per Engg.			
5	Burst Pressure	: 38 Kg/cm ²			
6	Operating Pressure	: 12 Kg/cm ²			
7	Proof Pressure	: 22 Kg/cm ² shall be conducted along with coupling duly bound on hose pipe by GI Wire			
8	Size	: 63 mm x 15 M long			
9	Type of Coupling	: Instantaneous as per IS:14933-2001			
10	Hoses shall have ISI certification marks	: Yes			
11	Material of Hose	Rubber lined, woven jacketed type conforming to IS: 636 Type A			
11.1	Material of hose coupling	: SS			
12	Whether approved by TAC	: Yes			
13	Marking	: IS:14933-2001 Year of Manufacturer Manufacturers name of trademark			

TITLE :	TECHNICAL DATA SHEET FOR HOSE BOX	DOC NO.	:AMTZ/FPS/03		
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE	04.06.2019
PROJECT	CENTRAL WAREHOUSE AT AMTZ,AP	SHEET	1	OF	1

- 1.0 Manufacturer : REPUTED MAKE. Catalogue / specification to be approved by owner before placement of order.
- 2.0 Code/Standard : Manufacturer's standard
- 3 Material of Construction : Sheet fabricated from 18 SWG MS sheet
- 4 Hose Box (External) : l) Accomodating 2 nos. of 63mm x 15 m long hose and 1 no. of branch pipe coupling, spanner & nozzle (JET type/Universal typ) for external hydrant valve branch pipe coupling, spanner & nozzle (JET type/Universal type) for external hydrant valve branch pipe with nozzle
- 5 Type : Wall/column mounted (for fire escape hydrant) with key box
Pedestal mounting (for external hydrant) with key box
Glass fronted door fitted with 4mm thick clear
- 6 Size : 750mm x 600mm x 250mm
- 7.0 Quantity : As per BOQ/Schedule of Work
- 8.0 **Painting (Inside & Outside)** : powder coated finish of red out side & white
- 9 Marking : Fire in 150mm size letter on glass
- 10 Locking arrangement : Built in lock, reputed make with 2 keys
- 11 Approval : Owner's approval
- 12 Drawings enclosed : Yes
- 13 Canopy provided : Yes, only for external hose box
- 14 Accessories provided : Yes, as per specification (Small container having as
- 15 Catalogue/Drg enclosed : Drawing of selected vendor will be attached

Note: HOSE BOX SHALL INCLUDE:

1. Key box will be with hammer & chain
2. For leg mounted: Suitable height of pedestal w.r.t. local ground level and the location as per

TITLE :	TECHNICAL DATA SHEET FOR HYDRANT VALVES	DOC NO.	AMTZ/FPS/04		
PACKAGE:	FIRE FIGHTING SYSTEM	REV.	0	DATE:	04.6.2019
PROJECT:	CENTRAL WAREHOUSE AT VIZAG	SHEET	1	OF	1
1.0	Manufacturer	GEI / Newage / Shah Bhogilal / Fire Shield / Sha Engg /Equivalent			
2.0	Type	Female Oblique type outlet angled towards ground			
3.0	Code / Standard	: IS:5290 Type A			
4.0	Hydrostatic Pressure of Test Body	: 21 Kg/cm ² (g)			
5.0	Water tightness test at valve	: 14 Kg/cm ² (g)			
6.0	Flow	: 54 m ³ / Hr at 7			
7.0	Size	: Inlet 100 NB for double headed , 80 NB for single headed & Outlet 63 NB			
8.0	Bonnet Type	: Screwed / Bolted			
9.0	Stem type	: As per IS:5290 (Rising)			
10.0	Operation	Handwheel			
11.0	Inlet	: Flanged (Flat Faced) drilled as per ANSI B 16.5, class 150 FF			
11.1	Outlet	: Female instantaneous coupling with spring lock type coupling as per IS:5290 with blank cap & chain			
12.0	MATERIAL OF CONSTRUCTION				
12.1	Column Pipe	: MS Black to IS:1239 (Part -I) Heavy			
12.2	Body	: SS to IS:3444 Gr.01			
12.3	Bonnet	: SS to IS:3444 Gr.01			
12.4	Stop valve	: SS to IS:3444 Gr.01			
12.5	Seat	: Neoprene Rubber			
12.6	Check nut & Gland Nut	: SS to IS:3444 Gr.01			
12.7	Spindle	: IS:6603-1972 Gr04 Cr. 04 18 Ni 10			
12.8	Hand Wheel	: CI to IS:210 Gr. 20			
12.9	Instantaneous coupling	: SS to IS:3444 Gr.01			
12.10	Spring	: Phosphor Bronze as per IS :7608			
12.11	Gland packing	: Asbestos as per IS : 4687			
12.12	Washer, Gasket	: Rubber to IS:937			
13.0	Approval	: ISI Marked			

TITLE :	TECHNICAL DATA SHEET FOR WATER MONITOR		DOC NO.	AMTZ/FPS/05	
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ, VIZAG	SHEET	1	OF	1

1	Manufacturer	: HD Fire/ Newage/GEI / Shah Bhogilal / Equivalent Make
2	Confirms to IS Code	: IS: 8442
3	Type	: Stand post 4 " NB
4	Size Barrel/Nozzle	: 63 mm
5	Discharge Capacity	: 1750 ltr/min. At 7 kg/cm2
6	Hydrostatic Test Pressure(without nozzle)	: 23m kg/cm2 (leakproof)
7	Throw (at 7 kg/cm2)	:
7.1	Min. Horizontal	: 53 m
8	Rotation	Horizontal- 360 deg
8.1	Horizontal	: 360 Deg. In either direction
8.2	Vertical	: Vertical- 125 deg (Upward + 80 Deg.; Downward – 45 Deg)
9	Material of construction	
9.1	Water Barrel	: MS seamless pipe to IS:1239
	Elbow (Bend) & Reducer	IS 4310 & IS 1239 Part II Gr A
9.2	Male & Female Swivel Joint	: Gun Metal to IS: 318 Gr. LTB 2
9.3	Locking Nut	: Brass IS:291 - 1
9.4	Handle	: Steel round bar - MS
9.5	Nozzle	: Bronze IS:318 LTB 2
9.6	Base Flange	: M.S. to IS: 2062
9.7	Flange drilling dimension	: As per ASA 150#, B 16.5 , 4" NB
10	Acceptability to TAC	: ISI marked
11	Inspection & Testing	: As per approved QAP
12	Accessories	: Nozzle Spanner & Blank cap
13	Anti Corrossive Treatment	Hot Dip Galvanising for ferrous items & all items with 3 coats of fire red colour as per IS : 5

TITLE :	TECHNICAL DATA SHEET FOR PRESSURE GAUGES	DOC NO.	MMLH/FPS/6		
PACKAGE:	FIRE FIGHTING SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ,VIZAG	SHEET	1	OF	1
1.0	Manufacturer	Fiebig/H Guru / Pricol/ Waree/ Equivalent approved make			
2.0	Type	Bourden Type / Glycerine Filled			
3.0	Quantity	As per approved drawing			
4.0	Location	Direct mounting on the pipe			
5.0	Accuracy	+ - 1% of FSD			
6.0	Size of Dial	150 mm			
7.0	Scale	Liner (270 Deg.Arc)			
8.0	Range	0 - 14 Kg / cm ²			
9.0	Material of Construction				
10.0	Movement	AISI SS 304			
	Burdon Material	AISI SS 316			
11.0	Sensing Element	Burdon Type			
	Connection Size	1/2" NPT (Male) Threaded			
11.1	Connection	Screwed			
	Connection Material	Carbon steel			
11.2	Case Construction	Die Cast Aluminium Weather Proof IP - 65 Stove Enamelled Black Finish			
	Pointer Type	Micro Zero Adjustment Type			
12.0	Over range protection	125% of the Full Scale Range			
	Over range pointer stopper	Yes, provided			
12.1	Identification Tag Plate	Yes, provided (Material - Aluminium)			
12.2	Snubber Screw	Yes, provided			
NOTES	1) For TAG Nos. of Pressure Gauge P & I Diagram 2) Isolation Valves for Pressure Gauges shall be provided 3) All mounting accessories shall be provided				

		DOC NO.	AMTZ/FPS/7		
TITLE :	TECHNICAL DATA SHEET FOR PIPE, FITTINGS & FLANGES				
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ, VIZAG	SHEET	1	OF	1
1.0	Manufacturer	: JINDAL / TATA / SAIL/ Equivalent Make			
2.0	PIPING (UNDERGROUND / ABOVE GROUND / IN TRENCHES) (NORMALLY FILLED WITH WATER)				
2.1	Standard	: IS : 1239 (Part-I), IS : 3589, Gr 330			
2.2	Type	: ERW / Spiral Weld			
2.3	Class & Grade	:			
		a Up to 150NB MS Black Heavy grade to IS : 1239 (Part-1)			
		b 200 NB TO 400 NB M S Black to IS : 3589 Grade 410			
2.4	Thickness	: a. Up to 150 NB As per IS 1239 (Part-1), Heavy			
		b. 200 NB to 400 NB – 6.4 mm thk.			
2.5	Detail of end connection	: Plain ends or Beveled ends			
3.0	PIPING – NORMALLY EMPTY				
3.1	Standard	: IS : 1239 Part-I (Galvanised) / IS:3589 Gr. 330 (Galvanised to IS : 4736)			
3.2	Type	: ERW			
3.3	Class & Grade	: M.S Galvanised to medium grade to IS : 1239 Part – I and MS Galvanised, 6mm thk to IS 3589 Gr.410			
3.4	Thickness	: a. Up to 150 NB As per IS 1239 (Part – I) Heavy			
		b. 200 NB as per IS: 3589, Gr.410, 6mm wall thickness			
3.5	Detail of end connection	: Screwed			
4.0	Inspection & Testing	: As per appd.QAP			
5.0	Type of protective coating	: <u>For U/G Pipes</u> PYPKOTE As per IS -10221– 4mm THK Ref-Data Sheet : Wrapping & Coating Material			
6.0	M.S.Fittings				
6.1	Manufacturer	Bharat Forge/ Tube Products/M.S. Fittings/ Sanjay Forge/ VS Brand / Equivalent approved make			
6.2	Material Standard	IS: 1239 , Part II			
6.3	Dimensional Standard	50 NB & Below ASME B 16.11, CL 3000 65 NB to 150 NB Butt welded as per ASME B 16.9 200NB to 400 NB			
7.0	Galvanised Fittings				
7.1	Manufacturer	H.B. INDUSTRIES/ equivalent			
7.2	Material Standard	Malleable cast iron to IS 2108 Grade BM-300 as per IS 14329			
7.3	Dimensional Standard	IS 1879			
7.4	Galvanising	IS 4759			
7.5	Flanges & Blind flanges				
	Material Standard	SA 105			
	Drilling Standard	Confirming to ASME B 16.5, 150 #, SORF			
7.60	Bolts and nuts & Washers	Machine Bolts, For Size M 16 & Below IS : 1367 Gr. 8.8. & For Size M 20 & Above IS : 1367 Gr. 6.8. Heavy Hexagonal Nut For Size M 16 & Below IS : 1367 Gr. 8.0. & For Size M 20 & Above IS : 1367 Gr. 6.0. All nut, bolt & washers shall be galvanised.			
7.70	Gaskets	Champion AF 120 - 3 mm Thk. Non Asbestos			
Note : FLANGES AND BOLTS & NUTS FOR G.I. PIPE LINES SHALL BE GALVANISED AS PER IS : 4736					
Stamp & Signature of the Tenderer		Tender No. EP/AMTZ/CWH/FPS/04		Page 59 of 77	

TITLE :	TECHNICAL DATA SHEET FOR C I GATE VALVES	DOC NO.	AMTZ/FPS/8		
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ, VIZAG	SHEET	1	OF	1

1.0	Manufacturer	KBL/ H sarkar / Fluid Control /Upadhya/ Kalpana/ Hawa or EAM			
2.0	Type	Rising Spindle			
3.0	Size	All sizes with Flanged ends			
4.0	Quantity	As per approved drawings			
5.0	Code/ Standard	IS-14846			
6.0	Material of construction				
6.1	Body	CI to IS:210 FG 260			
6.2	Bonnet	CI to IS:210 FG 260			
6.3	Hand wheel	CI to IS:210 FG 200			
6.4	Stem	SS , IS: 6603, GR 12 CR 13			
6.5	Wedge	CI to IS:210 FG 200			
6.6	Gland	CI to IS:210 FG 200			
6.7	Packing	Jute & Hemp IS:5414			
6.8	Body seat ring	Leaded to Bronze to IS:318 Gr. LTB2			
6.9	Wedge seat ring	Leaded to Bronze IS:318 Gr. LTB2			
6.10	Gaskets	Rubber to IS: 638 Type – B			
6.11	Counter flange	IS:2062 drilled to ANSI B 16.5 # 150 (By others)			
7.0	Hydrostatic test pressure (as per mfr drg)				
7.1		PN 1.6	PN 1.0		
a)	Body	24 Kg/cm ²	15 Kg/cm ²		
b)	Seat	16 Kg/cm ²	10 Kg/cm ²		
8.0	End connection	Flanged connection (B16.5 150 #, FF)			
9.0	Hand wheel	Provided			
10.0	Spur gear reduction unit	Provided (For size 350 & above			
11.0	Accessories provided				
11.1	Position indicator	Provided			
11.2	Locking arrangement	As required			

12.0 Painting

Stamp & Signature of the Tenderer

Tender No. EP/AMTZ/CWH/FPS/04

Two coats of epoxy painting on internal & external unlined surface of valve

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TITLE : TECHNICAL DATA SHEET FOR C I NON RETURN VALVES		DOC. No.	AMTZ/FPS/09		
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ, AP	SHEET	1	OF	1
1.0	Manufacturer	KBL/H sarkar / Fluid Control /Upadhya/ Kalpana/ Venus/ Hawa/ InterValve/ Hawa/Equivalent approved make.			
2.0	Type	: Reflex Swing Disc type			
3.0	Quantity	: As per approved drawings			
4.0	Working pressure/Design temp.	: 10.5 Kg/cm2 / 50 Deg. C			
5.0	Size	: 65 NB & above			
6.0	Code/Standard	: IS: 5312, PN 1.6			
7.0	End connection	: Flanged to ANSI B 16.5 (CI 150 Flat Face)			
8.0	Material of construction				
8.1	Body	: CI IS:210 Gr. FG260			
8.2	Cover	: CI IS:210 Gr. FG260			
8.3	Door	: CI IS:210 Gr. FG260			
8.4	Body Seat Ring	: Bronze IS: 318 LTB 2			
8.5	Hinge	: CI IS:210 Gr. FG260			
8.6	Hinge pin	: SS to IS: 1570(PT- 5),GR 12, CR 13			
8.7	Bolts & Nuts	: CS IS:1367, CL-4.6 & CS IS:1367, CL-4.0			
8.8	Gaskets	Rubber to IS: 638 Type – B			
8.9	Counter flange	IS:2062 drilled to ANSI B 16.5 # 150			
9.0	Hydrostatic test pressure				
9.1	For PN 1.6 Rating				
a)	Body	24 Kg/cm2			
b)	Seat	16 Kg/cm2			
9.2	Disc Facing Ring	: Rubber to IS : 638 Type A			
9.3	Gaskets	: CAF, IS:2712, Gr. W/3			
9.3	Hydrostatic Test Pressure				
a	Body	: 24 kg/cm2			
b	Seat	: 16 kg/cm2			
9.4	Indication for direction flow	: Permanently marked arrow on the valve body			
9.5	Marking	: ISI Marked			
9.6	Painting	Two coats of epoxy painting on internal & external unlined surface of valve (100 micron thickness)			

		DOC NO.	AMTZ/FPS/10		
TITLE :	TECHNICAL DATA SHEET FOR WRAPPING AND COATING MATERIAL				
PACKAGE:	FIRE PROTECTION SYSTEM	REV.	0	DATE:	04.06.19
PROJECT:	CENTRAL WAREHOUSE AT AMTZ,VIZAG	SHEET	1	OF	1

- 1.0 Manufacturer : M/s IWL/ Rustech
- 2.0 Type : "PYPEKOTE' (Branded Product)/ EAM
- 3.0 Application : Wrapping & Coating on underground pipelines
- 4.0 Brand Name : "PYPEKOTE" (4mm thk. +/-0.2 mm) / Equivalent
- 5.0 Code / Standard : IS : 10221
- 5.0 **SPECIFICATION OF TYPEKOTE 4mm TAPE**
- 5.1 Width : 100 to 500 mm (depends on pipe size & mfr recommendation)
- 5.2 Lenath : 10 m
- 5.3 Tensile Strength (N/5cm) : 300 (Min.) - Length wise
100 - Cross wise
- 5.4 Elongation : 20% (Min.) - Length wise
30% - Cross wise
- 6.0 **SPECIFICATION OF PYPEKOTE PRIMER**
- 6.1 Viscosity : 35 to 100 seconds
- 6.2 Drying Time : 15 to 30 minutes
- 6.3 Flash Point : 23 Deg. C (Min.)
- 6.4 Drying Time : 15 to 30 minutes
- 6.5 Density (gm/cm3) : 0.9 to 0.95
- 7.0 Quantity : As per approved layout drawings

			DOC NO.		AMTZ/FPS/11	
TITLE :	PAINTING OF PIPING, EQUIPMENT & STRUCTURE					
PACKAGE:	FIRE PROTECTION SYSTEM		REV.	0	DATE:	04.06.2019
PROJECT:	CENTRAL WAREHOUSE AT AMTZ, VIZAG		SHEET	1	OF	1

PAINTING OF PIPING, EQUIPMENT AND STRUCTURE

1.0 GENERAL

This specification describes requirements of supply an application of paints for equipment, piping, structural etc. for over ground surface.

2.0 GENERAL INFORMATION

2.1 All external or exposed surface of mechanical & electrical equipment, vessels, tanks, ducts, piping, valves, accessories and surfaces of all structures, platforms, galleries etc. shall be provided with required primer and finish painting after necessary surface preparation.

2.2 Quality of primer shall be chosen that they are suitable for withstanding maximum expected surface temperature and they type of atmosphere it is exposed to.

2.3 Application of primer and finish paints shall be done at site of far as possible except for finished machine and equipment such as diesel engine, pumps, compressor etc . For such finished equipment and components there of, the painting may be completed at shop and transported to site with paint duly protected. For items such as structures, plates, tank shells, pipe pieces etc. shop coat of protective paint shall be given before dispatch to site.

However, touch-up paints shall be done at site after erection and commission as per the instruction of the purchaser.

2.4 The Bidder shall follow the provisions of TAC, Indian Standards or equivalent approved other National Standards in selection of paints, application and surface preparation

3.0 PAINTING SCHEME

3.1 The scheme of painting to be followed for various equipment are furnished in Appendix. The Bidder may suggest any alternative painting scheme if the same is superior to the suggested scheme. The final scheme of painting to adopted shall be subjected to purchaser's approval.

3.2 When material or paint is specified or described by the name of a particular brand, manufacturer or vendor, the specific time mentioned shall be understood as

indicating the function and quality desired. Other manufacturer's product shall be approved provided specific information is given to allow the purchaser to evaluate the product proposed.

3.3 Surface Preparation

Anyone of the following surface preparation methods shall be adopted as stated below.

Power Wire Brushing

All surface shall be manually cleaned of rust/mill scale by power wire brush, carborundum tips etc. User of chopping hammer, emery paper shall be done to clean pitted areas to the satisfaction of site in-charge.

4.0 PAINTING SEQUENCE

4.1 The surface preparation by Power Wire Brushing

4.2 COATS

A. Prime Coat

2- coats of Red Oxide Primer : 30 Micron DFT / coat

B. Finish Coat

2- coats of synthetic enamel paint (Minimum 50 microns dry DFT per coat).

Total DFT is minimum 160 micron.

Contractor shall bring Elcometer for checking paint thickness.

5.0 RECOMMENDED PARTS MANUFACTURER

- a) BERGER PAINTS (I) LTD.
- b) CDC CARBOLINE
- c) ASIAN PAINTS (I) LTD.
- d) GOODLAS NEROLAC PAINTS LTD.
- e) JENSON & NICHOLSON
- f) SHALIMAR PAINTS
- g) BOMBAY PAINTS

TITLE :	TECHNICAL DATA SHEET FOR SPRIINKLERS	DOC NO.: AMTZ/FPS/12
		Rev 0
PACKAGE:	FIRE PROTECTION SYSTEM	Date: 04/06/2019
PROJECT:	Central Warehouse at AMTZ, Vizag	Sheet: 1 of 1
S.No.	Description	Details
1	Make	HD/Viking/Tyco or equivalent approved make
2	Response & Coverage	Standard
3	Mounting Type	Pendent
4	Temperature Rating	68 ⁰ C (155 ⁰ F)
5	Material of Construction	Brass
6	Finish	Chrome Plated
7	Approvals	UL Listed/ FM Approved
8	Temperature Response	Standard Response with 5mm glass Bulb
9	Nominal Oriffice Size	1/2" (12.7 mm)
10	K-Factor	5.6 US (80 Metric)
11	Nominal thread size	1/2" NPT/ BSPT
12	Maximum Work Pressure	175 PSI (12 Bar)
13	Factory Hydrostic Test Pressure	500 PSI (35 Bar)
14	Min Operating Pressure	7 PSI (0.5 Bar)
15	Glass Bulb colour	Red
16	Deflector	ASTM C22000 B 36
17	Bulb	Glass with glycerine solution
18	Bulb Nominal Diameter	Std. Response 5.0 mm
19	Load Screw	ASTM C36000 B 16
20	Cap	Copper
21	Seal	Belleville Washers Coated on both sides with Teflon Tape
22	Frame	ASTM C37700 B124

Above specifications are indicative only.

TITLE :	TECHNICAL DATA SHEET FOR FLOW SWITCH	DOC NO.: AMTZ/FPS/13
		Rev 0
PACKAGE:	FIRE PROTECTION SYSTEM	Date: 04/06/2019
PROJECT:	Central Warehouse at AMTZ, Vizag	Sheet: 1 of 1
S.No.	Description	Details
1	Make	System Sensor or Equivalent Approved make
2	Static Pressure Rating	450 PSI (Max)
3	Triggering Threshold Bandwidth (Flow Rate)	4-10 GPM
4	Maximum Surge	18 Feet Per Second (FPS)
5	Operating Temperature Range	32 ⁰ F to 120 ⁰ F(0 ⁰ C TO 49 ⁰ C)
6	Enclosure Rating	NEMA 4 -Suitable for Indoor Outdoor use
7	Compatible Pipe	Steel Water Pipe, Schedule 10 through 40
8	Contact Rating	Two Sets of SPDT (FormC)10.0A. 1/2 HP@125/250VAC 2.5A@6/12/24VDC
9	Conduit Entrances	Two Opening for 1/2"conduit, One Open, One Knock out type
10	Mounting Position	Vertical or Horizontal position
11	Pipe Size	Size 2" to 8"
12	Service Use	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
13	Cover Tamper Switch	Standard with ULC Models , Optional for UL Models

Above specifications are indicative only.

TITLE :	TECHNICAL DATA SHEET FOR FLEXI DROPS	DOC NO.: AMTZ/FPS/14
		Rev 0
PACKAGE:	FIRE PROTECTION SYSTEM	Date: 04/06/2019
PROJECT:	Central Warehouse at AMTZ, Vizag	Sheet: 1 of 1
S.No.	Description	Details
1	Make	Safex Fire Services Ltd
2	Type	UL Approved Flexible Hose
3	Dimension	1500 mm /1000 mm
4	Material Body	Non Braided type Stainless Steel
5	Inlet / outlet	Stainless Steel (1": 1/2")
6	Hose Diameter	3/4"Size
7	Pressure Rating	175 PSIG
8	Maximum Ambient Temp	300 ⁰ F
9	Minimum Bend Radius	4 "
10	Label	UL Label

Above specifications are indicative only.

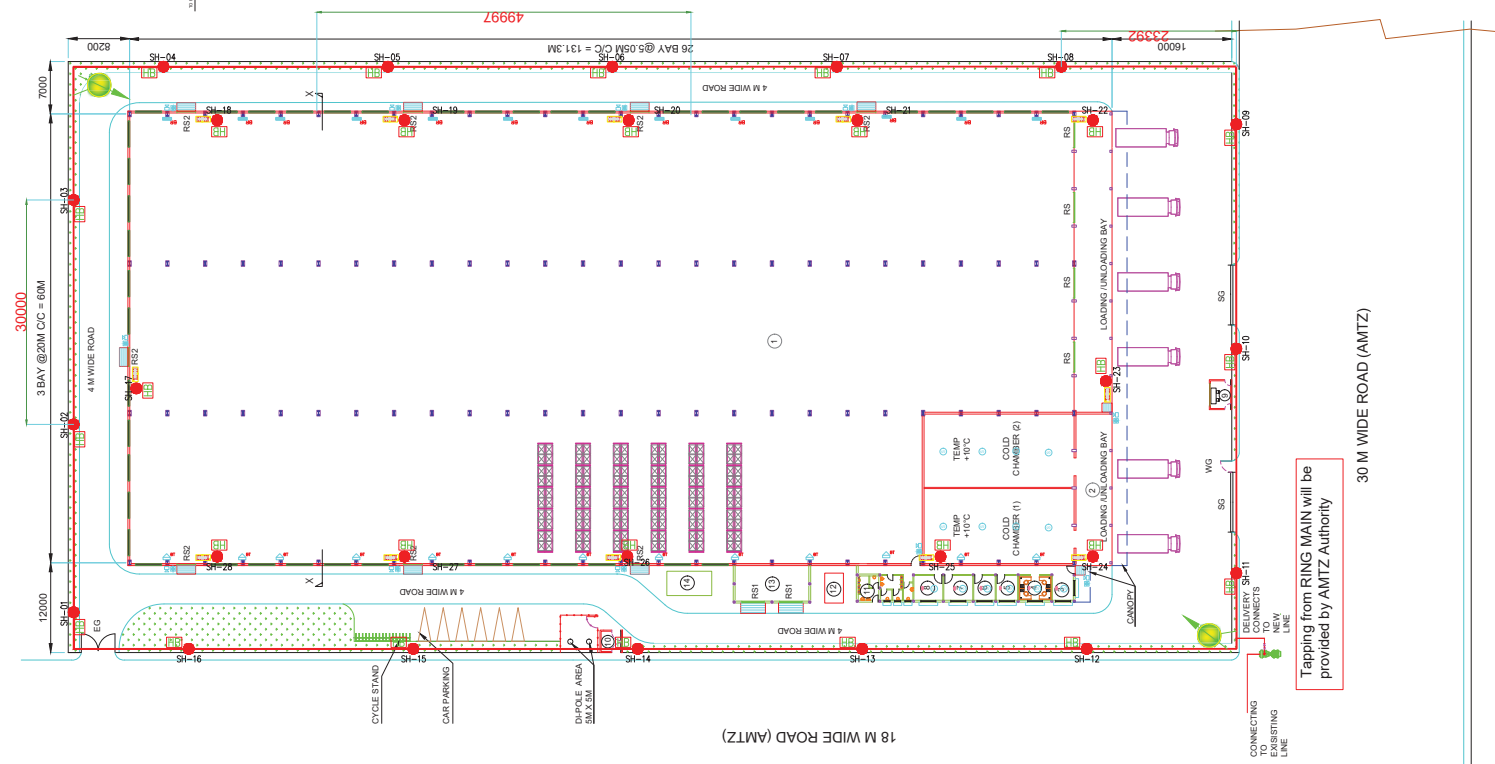
TITLE :	TECHNICAL DATA SHEET FOR FRLS CABLE	DOC NO.: AMTZ/FPS/15
		Rev 0
PACKAGE:	FIRE PROTECTION SYSTEM	Date: 04/06/2019
PROJECT:	Central Warehouse at AMTZ, Vizag	Sheet: 1 of 1
S.No.	Description	Details
1	Make	
2	Size of Cable	2c X 1.5 Sq.mm
3	Conductor	ABC (Conductor Class 5 of is:8130-1984)
4	Minimum Number of Twists/Meter	16
5	Core Insulation	Type A
6	Colour of Core Insulation	Red , black
7	Outer Diameter	11.4mm(Max)
8	Maximum Resistance of Conductor	12.1Ω/Km
9	Shielding/Unshielding	Un Screened
10	Voltage Rating	1100 Volts
11	Outer Sheathing	FRLS
12	Armoured /Unarmoured	Armoured /0.9GI Wire
13	Colour of Outer Cheath	Red
14	Standard of Construction	Confirm IS Standard
15	FRLS/ LSHF	FRLS
16	Temperature Index	>=250 Degree C
17	Oxygen Index	>=30%
18	Acid Gas Generation	<=20%
19	Smoke Density Rating	<=60%
20	Period of Buring after removal of flame	<=60%

Above specifications are indicative only.

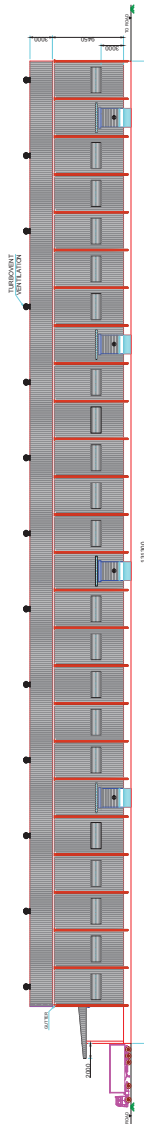
TENDER DRAWING

List of Drawings

Sl.No.	Title	Drawing No.	Revision	Date
1	LAYOUT PLAN OF AMTZ CENTRAL WAREHOUSE	DRG.NO. EP/CWH/AMTZ/01	Rev. No. 1	18-05-2019



SOUTH-WEST ELEVATION

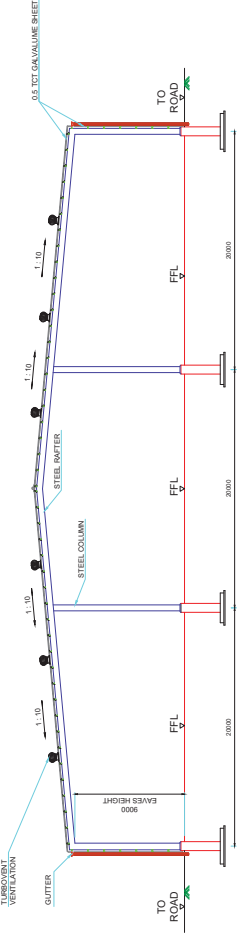
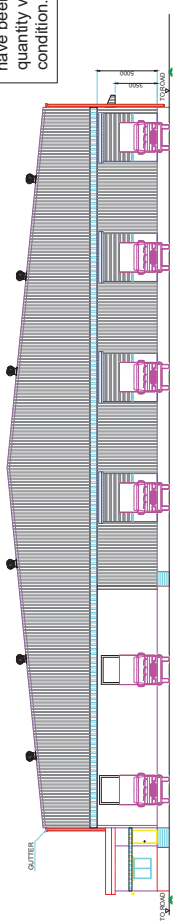


NOTE: In the schedule, extra quantities have been considered to take care of quantity variation while execution as per site condition.

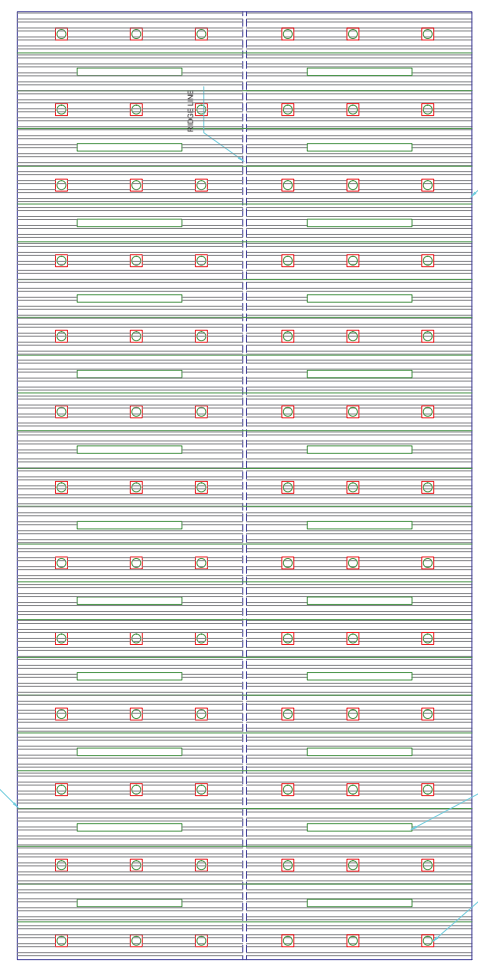
FIRE LEGENDS

SYM.	DESCRIPTION	QTY
●	HYDRANT VALVE	28
○	HOSE REEL DRUM 3MTR	02
□	HOSEBOX WITH HOSES AND BP	28
□	BEAM DETECTOR TRANSMITTER	02
□	BEAM DETECTOR RECEIVER	02
□	MANUAL CALL POINT	11
□	HOOTER	11
□	SMOKE DETECTOR	44
□	BOOSTER PUMP	01
□	NON RETURN VALVE	01
□	BUTTERFLY VALVE	01
□	PENDENT SPRINKLER	08
□	WATER MONITOR	02

FRONT ELEVATION



SECTION X-X



ROOF PLAN

AREA STATEMENT

SL.	DESCRIPTION	AREA (SQ. M)
1	WAREHOUSE 60M X 131.3M	7878
2	COLD STORAGE 20M X 28.25M	565
3	RECEPTION ROOM 3M X 5M	15
4	WORKS STATION 4.5M X 3.5M	15.75
5	OFFICE ROOM 3.5M X 3M	10.5
6	ACCOUNTS ROOM 3.5M X 3M	10.5
7	PAINT MANAGER ROOM 4M X 3.5M	14
8	CONFERENCE ROOM 4M X 3.5M	14
9	GATE OFFICE 3M X 4M	12
10	METER ROOM 3M X 3M	9
11	OUTSIDER TOILET 3M X 3.5M	10.5
12	500 KVA DB WITH ACUSTIC ENCLOSURE	10
13	LT ROOM 12M X 5M	60
14	1KV PKG OUTDOOR TYPE SUBSTATION	10

ITEM	QTY	UNIT	HEIGHT (M)	DESCRIPTION
RS	04	4	4.5	CHAIN TYPE MECHANICAL GEAR OPERATED.
RS1	02	3	4.5	CHAIN TYPE HAND OPERATED
RS2	08	2.5	3.0	CHAIN TYPE HAND OPERATED
SS	02	8	2	AUTOMATED SLIDING GATE
EG	01	4.5	2	DOUBLE LEAF SWING TYPE
WG	01	1.5	2	SINGLE LEAF WICKET GATE

PLOT AREA = 3.03 ACRES

TENDER PURPOSE ONLY

Balmer Lawrie & Co. Ltd.
ENGINEERING & PROJECTS

PROJECTS: PROPOSED CENTRAL WAREHOUSE AT AMTZ, VZAG

OWNER: BALMER LAWRIE & CO. LTD. SBU/LI

TITLE: LAYOUT PLAN OF ATMZ CENTRAL WAREHOUSE

DRAWN: KD 18.05.19
CHECKED: GCS 20.03.18

NO. DATE REVISION BY CHKD. APPD. APPROVED

AND SHALL NOT BE DISCLOSED TO A THIRD PARTY COPIED OR USED WITHOUT THE WRITTEN CONSENT OF BALMER LAWRIE & CO. LTD.

JOB NO. DWG NO. EP/AMTZ/2018/001

REV./J. SHEET 1 OF 1

30 M WIDE ROAD (AMTZ)

Tapping from RING MAIN will be provided by AMTZ Authority

CONNECTING TO EXISTING LINE TO NEW LINE



बामर लॉरी एण्ड कं. लिमिटेड
Balmer Lawrie & Co. Ltd.

(A Government of India Enterprise)
Engineering & Projects
21, Netaji Subhas Road
Kolkata - 700 001

**Supply, Installation, Testing & Commissioning of Fire
Protection System for Central Warehouse**

at

AMTZ, ANDHRA PRADESH

Tender No. EP / AMTZ / CWH / FPS / 04

PRICED PART (PART-II)

NOTES:

- 1.0 Details of the items under this Schedule shall be read in conjunction with the corresponding Specifications, Drawings and other Tender Documents.
- 2.0 The work shall be carried out as per approved drawings, Specifications and the description of the items in this Schedule and/or Engineer's instructions. Drawings enclosed with these documents are only for providing some preliminary of the work involved.
- 3.0 Items of work provided in this Schedule but not covered in the Specifications shall be executed strictly as per instructions of the Engineer-In-Charge.
- 4.0 Unless specifically mentioned otherwise in the Contract, the Tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, Constructional Plant, Temporary Work, labour, materials, levies, taxes, transport, layout, re-pairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the contract.
- 5.0 The Quantities of the various items mentioned in the Schedule of Items are approximate and may vary or may be deleted altogether. The Contractor, in his own interest, should get an indication of the probable extent of the work to be executed under any particular item in this Schedule before undertaking any preliminary and enabling work or purchasing bought out components related to the work.
- 6.0 Rates shall be quoted both in figures and in words in clear legible writing. No over writing is allowed. All scoring and cancellations should be countersigned by the Tenderer. In case of illegibility, the rates written in word will be considered final. All entries shall be in English language.
- 7.0 Engineer's decision shall be final and binding on the Contractor regarding clarification of items in this Schedule with respect to the other sections of the Contract.
- 8.0 For extra items, rates shall be derived from similar item rates included in the schedule of work. Where there is no such similar item available in the schedule, rate shall be analyzed as follows:
Rate for extra item = Cost of material including transportation for delivery upto site (a) + cost of labour inclusive of all necessary tools, tackles, equipment, machinery and consumable (b) required to carry out the work + 15% of (a+b) towards profit and overhead + taxes, duties etc. as applicable.

Schedule of Work

Supply, Installation, Testing and Commissioning of Fire Protection System for Central Warehouse at AMTZ, Andhra Pradesh

Tender No EP / AMTZ / CWH / FPS / 04

Sl. No.	Description	Unit	Qty	Unit Rate (Rs)	Amount (Rs)
	Supply, Installation, Testing & Commissioning (SITC) of				
1.0	Electrical motor driven online Booster pump of monoblock type capable to deliver 1600-LPM (96 Cum/ Hr) at 45 MWC. The pump shall be coupled to TEFC motor of suitable HP Rating with speed of 2900RPM and complete set shall mounted on common base frame. The installation shall be complete with necessary pressure gauge with gun metal shut off cock on suction & delivery side. The quoted rate shall includes providing & fixing of anti vibration pad and suitable size of metal expansion bellows at suction & delivery side of the pumps and Foundation bolts etc. Hydrant Tapping will be available from central rainm main laid by AMTZ Authority. This item along with item no 2 & 3 will be executed as per requirement at site only if the pressure available at tapping point/battery limit is low. As the pump will be installed outside, suitable canopy to be provided on the motor.	Set	1		
2.0	Suitable outdoor duty starter (Star-Delta type) electrical panel with all protection and Amp Meter / Volt Meter / Auto Manual selector etc. for the above mentioned pump.	Set	1		
3.0	Cabling of suitable size (along with termination) from Electrical Starter to Motor for commissioning of the pump. However, incoming supply to starter is not included in the scope. Earthing of the Pump and panel from the nearest earthpit shall be included in this item.	Lot	1		
4.0	Dial type glycerine filled pressure gauge with 150 mm dial and range of 0-14 Kg./sq.cm. together along with ball valve of 15 mm and GI Barrel Nipples.	Nos	1		
5.0	Supplying, laying, testing and commissioning of above-ground piping carried out of MS Class "C" ERW pipes as per IS : 1239 for pipes upto 150 mm NB and as per IS:3589 (6.35mm thick) with all online Pipe Fittings, flanges (ASA 150 class), nuts, bolts (Galvanised), gaskets, washers, 'U' clamp and tapping for gauges/instruments including cutting, welding, fixing in / on walls, ceiling by using suitable supports etc.,. The quoted rate shall also include for chasing / chipping walls, making bore holes in walls / floor and making them good with filler material etc. The item rate shall also include surface preparation of pipes by wire brushing, application of 2 coat red-oxide primer and 2 coat of synthetic enamel finish paint. complete. Steel work for supports shall be paid under separate item.				
a	150mm nominal dia	Rmt	900		
b	100mm nominal dia	Rmt	24		
c	80mm nominal dia	Rmt	108		
d	50 mm nominal dia	Rmt	6		
e	25mm nominal dia	Rmt	24		
6	Supplying and laying underground buried piping (or road crossing) together with protective wrapping and coating for MS pipe as per IS : 1239 carried out of MS class "C" piping for pipes up to 150mm NB and as per IS : 3589 for pipes 200mm NB and above together with fittings and accessories as under : Rates shall include Excavation & Back filling in soft soil/murum and application of 4mm thick wrapping & coating material over under ground piping.	Rmt	40		
7	Supplying, installing, testing and commissioning of C.I. butterfly valves conforming to BS 5155 (PN 1.6) slim seal standard lever operated type with required flanges, nuts, bolts etc. complete.				
a	150mm nominal dia	Nos	4		
8	Cast Iron Gate Valve -Rising Spindle type (IS : 14846) with companion Flanges, Bolts, Nuts and Gaskets				
a	150mm nominal dia	Nos	2		
9	Supplying, installing, testing and commissioning of C.I. Non-return valves as per IS:5312 reflux swing check type with required flanges, nuts, bolts and gaskets etc. complete.				
a	150 mm nominal dia	Nos	4		

Do not quote here

Schedule of Work

Supply, Installation, Testing and Commissioning of Fire Protection System for Central Warehouse at AMTZ, Andhra Pradesh

Tender No EP / AMTZ / CWH / FPS / 04

Sl. No.	Description	Unit	Qty	Unit Rate (Rs)	Amount (Rs)
10	Stand Post type Water Monitor made of C.S Body having 63/32 mm nozzle size with flow capacity of 1750lpm@7Kg/Cm2 as per IS:- 8442 Type- "I", ISI marked.-Refer data sheet.	Nos	2		
11	Single headed oblique type ground faced hydrant valve conforming to IS 5290, made of gunmetal with 63 mm dia instantaneous outlet of 80 mm dia fanged inelt ,Blank caps , chain and CI hand wheels etc complete.	Nos.	28		
12	15 M long, 63mm dia RRL hose conforming to IS 636 Type A with instantaneous couplings and Hoses shall be stored inside the hose cabinet.	Nos.	56		
13	Gun metal short branch pipe with nozzle conforming to IS 903.	Nos.	28		
14	M.S. Hose cabinet (with canopy) stand mounted type fabricated out of M.S. sheet of 16 swg. with glass fronted (4mm thick glass with rubber beeding) door, lock and key suitable for 1 branch pipe and 2 hoses and size of the cabinet shall be 600mm x 750 mm x 250 mm. Quoted rate shall be includes suitable stand for mounting, all fasteners etc, and cabinet shall be powder coated of approved colour both inside and outside. (Structural work shall be paid separately).	Nos.	28		
15	First aid fire Hose reel drum of MS powder coated with fire red colour, 180° swinging type with 19mm dia Rubber braided hose of 30 m length with 25 mm dia Ball Valve and 6mm diameter Shut off nozzle, complete. Hose reel shall be fixed on wall.	Nos	12		
16	Fire brigade inlet siamese connection (4way) manifold including valves and check valve of size 150mm size having gunmetal 4 nos. 63mm dia Gun Metal instantaneous inlet arrangements to the main header complete with required flanges, bolt, nut and washer, cap and chain etc. It shall be as per IS 5131 with built in check valve and 150mmdia outlet connection to the fire main grid with 150mm dia Butterfly valve and non – return valve. Butteryfly valve & NRV shall paid under seprate item as mentioned above.	Nos	1		
17	Supplying and fixing approved make of 25mm dia automatic air release valve of single ball or spring loaded type complete with unions etc. complete.	Nos	2		
18	Supplying, installing, testing and commissioning of Gun metal chrome finished Ball valves with fittings of screwed end type.				
a	25mm nominal dia	Nos	3		
19	Supply, fabrication, erection, alignment and fixing in position, true to line and level, structural steel work for structural supports etc. made out of rolled steel angles, plates, steel tubes etc., including splicing, cutting, bending, drilling, welding, riveting, bolting etc., with all tools and tackles, plant and machinery including preparation of detailed shop drawings as per design drawings and specifications, wire brushing to remove mill scales etc and painting. Quoted rate shall be inclusive of two coat of primer and two coat of synthetic enamel paint of approved shade.	Kg	1,000		
20	Flow Switches to indicate and transfer signal to Fire Alarm Panel regarding the flow of the water in respective brusting of sprinkler	Nos	1		
21	Supplying, installing, testing and commissioning K 80 conventional Sprinkler quartzoid bulb type of standard coverage and standard response with 15 mm screwed end connection of 68 deg. C. temperature rating and orifice shall not be less than 12.7mm. Sprinklers shall be UL Listed / FM approved with Chrome finished.				
a	Pendent sprinkler	Nos	6		
22	Stainless steel corrugated flexible pipe(hose) for dropping sprinklers below false ceiling, pipe shall be 16 bar pressure rating and 1500 mm long 25 mm dia with union / reducer collar, clamps etc. as required.	Nos	6		
23	Supply & fixing of approved type rosette plates (Surface mounted type, in two piece) for Sprinklers below false ceiling area.	Nos	6		
24	Supply, installing, testing and commissioning of analogue addressable Fire Alarm Control panel with 48 hrs battery back up. The Panel Shall be single loop capacity. The control panel, battery charger etc, The panel shall consisting with 80 character LCD display and RS 485 for networking.	Nos	1		
25	Supply, installing, testing and commissioning of Analogue beam detector	Nos	12		

Do not quote here

Schedule of Work

Supply, Installation, Testing and Commissioning of Fire Protection System for Central Warehouse at AMTZ, Andhra Pradesh

Tender No EP / AMTZ / CWH / FPS / 04

Sl. No.	Description	Unit	Qty	Unit Rate (Rs)	Amount (Rs)
26	Supply, Installation, Testing and Commissioning of Intelligent Addressable Photo Electric Type Smoke Detectors - Below False Ceiling with indicating lamp, mounting base and all other mounting accessories complete as required.	Nos	6		
27	Supply, installing, testing and commissioning of Analogue Addressable I/O Module .	Nos	6		
28	Supplying, installing, testing and commissioning of Analogue Addressable Electronic Hooter cum Strobe (loop powered)	Nos	12		
29	Supplying, installing, testing and commissioning of Addressable Manual Call Point	Nos	12		
30	Monitor Module: Supply, Installation, testing and commissioning of Addressable Monitor Modules for Interfacing PFC/Dry Inputs of Sprinkler Line Flow Switch Status in Fire Alarm Panel integration with all the mounting accessories complete as required.	Nos	1		
31	Supplying, installing, testing and commissioning of 2 core x 1.5 sq. mm, annealed tin copper conductor, armoured FRLS outer sheathed PVC insulated Cable conforming to IS 1554 Part-1. with Ferrules, Lugs, saddles, saddles base, conduits (if required) & other accessories complete as required. Wherever the cable is laid inside the office, it shall be concealed as per the direction of Engineer-in-Charge. The job includes chipping of walls and making it good for concealed wiring.	Rmt	1700		
32	Supply, installation, transportation of Fire Extinguishers including supply of nuts, bolts, brackets etc. including making good of wall, wherever required, after installation and supply of all related material all complete as per codes, standards, specifications, documents and direction of Engineer-in-Charge.				
a)	CO2 type Fire Extinguisher -4.5 KG as per IS 15683	Nos	10.0		
b)	Mechanical Foam-9 Liter as per IS 15683	Nos	4		
c)	DCP type Fire Extinguisher -25 Kg as per IS 10658, Trolley type	Nos	2.0		
d)	ABC type Fire Extinguisher-6 KG as per IS 15683	Nos	24.0		
33	MS Fire Water buckets filled with sand including the structure of fixing- 3 buckets on MS fabricated stand. The stand shall be painted with red oxide or zinc chromate primer and synthetic enamel paint thereafter.	Nos	1.0		
34	Self Illuminated Signages-Fire Exit, Fire Extinguishers, Danger, Fire Bucket and No Smoking, Size 300 x 150 mm approx	Nos	22		
35	Self Illuminated Fire EXIT Signages 10 " X 12 "	Nos	6		
36	Supply & fixing of Signboard-Aluminium Composite Panel Board of 3mm with ecosolvent printing with Lamination and Radium Stickers of different sizes such as 12 inch X 6 inch, 8 inch X 4 inch or any other sizes	Sq. ft	75		
37	Sign-writing/Letter writing with 'Post Office Red' paint or any other shade (as directed by Engineer-in-Charge) on sign-boards or on the wall like "Fire Extinguisher", "Fire Bucket", "Danger", numbering of extinguishers etc.	Sq. m.	2		
38	S.I.T.C of 1.5 HP single stage, high speed, horizontal, centrifugal, open well Submersible pump (Kirsokar KOS N or equivalent model of other approved make) to be installed in RCC water reservoir along with standard length suitable size power supply cable suitable for operation on Three phase, 415 volts, 50 Hz, A.C Supply etc. complete as reqd. as per specifications below. Pump shall generate flow of 7.5 Cum/Hr at head of 20 mtr. The scope shall include supply and fixing GI pipe line with necessary fittings at pump delivery with connection to CPVC water line laid by other contractor. The scope also covers supply and installation of suitable IP-54 DOL starter for the mentioned pump with contactors, overload relays, on-off switches etc. (L&T or approved equivalent make). (1 No Pump - Work + 1 No Pump- Stand By)	Nos	2		
39	Supply, installation, testing & commissioning of C-PVC Sch 40 Brass Threaded end Ball valve of 2 Inches	Nos	2.0		
40	Supply, installation, testing & commissioning of C-PVC Sch 40 Brass Threaded end Ball valve of 1 1/2 Inches	Nos	2.0		

Do not quote here

Schedule of Work

Supply, Installation, Testing and Commissioning of Fire Protection System for Central Warehouse at AMTZ, Andhra Pradesh

Tender No EP / AMTZ / CWH / FPS / 04

Sl. No.	Description	Unit	Qty	Unit Rate (Rs)	Amount (Rs)
41	Supply, installation, testing & commissioning of C-PVC Sch 40 Brass Threaded end Ball valve of 1 Inches	Nos	2.0		
42	Supply, installation, testing & commissioning of C-PVC Sch 40 Brass Threaded end Ball valve of 1/2 Inches	Nos	1.0		
43	Supply & fixing of 1 1/2 inch brass gate valve with CI wheel	Nos	1.0		
44	Supplying and Fixing of 40 mm dia. Gun Metal vertical threading type non return valve , including cutting , threading etc. as reqd..	Nos	2.0		
45	Supply and installation of Brass mechanical type flange end flowmeter for AMTZ inlet of 50NB	Nos	1.0		
46	Excavation and back filling work with all materials, labour, tools and tackles complete as per direction of Engineer-In-Charge.	CuM	8.0		
47	P.C.C. work with shuttering, all materials, labour, tools and tackles complete as per direction of Engineer-In-Charge	CuM	4.0		
48	R.C.C. work (including shuttering & reinforcement @ max. 100 kg per Cum of concrete) with all materials,labour, tools and tackles complete as per direction of Engineer-In-Charge for the supports.	CuM	2.0		
A	TOTAL (BASIC)				
B	Add for Applicable GST(bidder to indicate %)				
C	GRAND TOTAL WITH GST				

Do not quote here