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***Project: Gopalpur Palm Resort –
Swosti Group***

Request for Proposal:

Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam,

on

Item Rate Contract Basis

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INTRODUCTION

Background

Swosti Premium Ltd., a leading hospitality group in Odisha, the owner and developer of a hospitality project titled Gopalpur Palm Resort located at Gopalpur, Odisha(hereafter referred to as “The Client”) is undertaking the development of a world-class hospitality destination under the brand “**Gopalpur Palm Resort**” at Gopalpur-on-Sea, District Ganjam, Odisha. The project envisions a premium coastal resort comprising a luxury hotel of B+G+9 storied building with 124+ keys, banquet and MICE facilities, restaurants, landscaped areas, spa & wellness, swimming pools, and associated amenities.

In pursuit of delivering a high-standard facility within a fixed timeframe, Swosti Premium Ltd. intends to select a reputed Original Equipment Manufacturer(OEM)/Authorised Dealer for Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam Item Rate **Contract** Basis.-

Project Summary

Sl. No.	Name of Work	Estimated Cost	Construction Period	Maintenance Period
07	Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam	₹ 410 Lakhs*	6(Six) Months	1 Year (DLP)+ 5 (Five) Years Paid

*Estimated Cost is exclusive of GST and based on current project planning and scope.

Scope of Work

The selected Bidder (hereafter referred to as the “**Contractor**”) shall be responsible for the following deliverables as per the terms of the Item Rate Basis contract:

- **Supply, Execution, Testing & Commissioning** based on issued GFC drawings
- **Procurement & Execution** of materials, manpower, equipment, and tools
- **MEP related facilitation with Civil Contractor in Coordination** with PMC as per client-appointed agency’s requirement.

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PREAMBLE

- 1 The work shall be carried out strictly in compliance with this tender and design requirement. The onus of demonstrating satisfactory performance of entire system shall be sole responsibility of the contractor and supplied material shall be as per specifications and approved shop drawings. Relevant Indian Standards shall be adhered. It is to be understood that all liabilities and risks arising out of the stated conditions of contract shall be covered by contractor and Owner/Consultant shall be indemnified.
- 2 The unit rate for all items in the BOQ shall be quoted in Indian Rupees (INR) and include cost of equipment, wastage, accessories, tools, appliances, labour, installation, testing & commissioning upto satisfactory handover.
- 3 The contractor shall ensure that unit price of each item includes cost of Equipment, materials, fixing accessories, appliances, tools, plants, transport, labour and incidentals required in preparation for and in the full and entire execution, testing, balancing, commissioning and completion of work called for in the item and as per Specifications and Drawings.
- 4 The contractor to ensure that all waste and debris is collected and satisfactorily disposed off from site.
- 5 The contractor shall ensure that unit price of each item includes loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fixing in position and insurance upto satisfactory handover including security.
- 6 The specifications and drawings shall be read in conjunction to the Bill of Quantities. In case of conflict between Bill of Quantities and other documents including the specifications, the most stringent shall apply. The interpretation of the Architect / Consultant /Project Manager shall be final and binding
- 7 The quantities mentioned in the BOQ are for contractor guidance only.The actual procurement of material shall be done only after written approval of shop drawings & technical submittals. This shall also apply to the Contractor's requisition for Owner supplied materials. The contractor shall be solely responsible for material supplied at site.
- 9 The contractor shall ensure work is carried out in conformity with the approved shop drawings and taking cognizance of latest architectural and other disipline drawings. The execution at site should be based on coordinated shop drawings or after obtaiing written approval of Project Manager/Architect/Consultant.
- 10 The progress of work shall be in accordance with approved pert chart which will be prepared by Contractor at the time of award of work and duly revised from time to time.
- 11 All shop drawings will be made on Autocad or Revit as per Project Manager requirement. Coloured prints shall be provided for site work. The shop drawings will clearly indicate requirement of hangars, supports, quantities and instructions for installation.
- 12 The information contained in this bid document, or any other information subsequently provided to Bidders—whether verbally, in documentary form, or by any other means—by or on behalf of the Client or any of its employees or advisers, is provided to the Bidders on the terms and conditions set out in this bid and such other terms and conditions subject to which such information is provided.
- 13 This bid document is not an agreement, nor is it an offer or invitation by the Client to any prospective Bidder or any other person. The purpose of this bid is to provide interested Bidders with information that may be useful in formulating their Proposals pursuant to this bid process.• This document includes statements that reflect various assumptions and assessments made by the Client in relation to the Services. Such assumptions, assessments, and statements do not purport to contain all the information that each Bidder may require. This bid may not be appropriate for all persons, and it is not possible for the Client, its employees, or advisers to consider the objectives, technical expertise, and particular needs of each party who reads or uses this bid.
- 14 The assumptions, assessments, statements, and information contained in this document may not be complete, accurate, adequate, or correct. Each Bidder should therefore conduct its own investigations, analysis, and due diligenG.M(B D),Swosti Premium Ltd and should check the accuracy, adequacy, correctness, reliability, and completeness of the information contained in this

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bid and obtain independent advice from appropriate sources. Information provided in this bid to Bidders covers a wide range of matters, some of which depend on interpretations of law. The information provided is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The Client accepts no responsibility for the accuracy or otherwise of any interpretation or opinion on the law expressed herein.

- 15 The Client, its employees, and advisers make no representation or warranty and shall have no liability to any person, including any Bidder, under any law, statute, rule or regulation, or under the principles of tort, restitution, or unjust enrichment, for any loss, damage, cost, or expense which may arise from or be incurred or suffered on account of anything contained in this bid or otherwise, including the accuracy, adequacy, correctness, reliability, or completeness of this document, or any assumption, statement, or information contained in or deemed to form part of this bid, or arising in any way in this selection process.
- 16 The issuance of this bid document does not imply that the Client is bound to select any Bidder for the provision of the Services, and the Client reserves the right to reject all or any of the Proposals without assigning any reasons whatsoever. •The Client may, in its absolute discretion—but without being under any obligation to do so—update, amend, or supplement the information, assessment, or assumptions contained in this bid.
- 17 The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal, including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by the Client, or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses shall remain with the Bidder, and the Client shall not be liable in any manner whatsoever for the same or for any other costs or expenses incurred by a Bidder in the preparation or submission of the Proposal, regardless of the conduct or outcome of the selection process.

Swosti Hotels

(A Unit of Swosti Premium Ltd.)

Corporate Office: Swosti Premium,
Jaydev Vihar, Bhubaneswar – 751013, Odisha

Email: info@swostihotels.com

Website: www.swostihotels.com

File No.: PMC/SPL/GPR/2025/01

Letter No.: 002 / Gopalpur, Date: 10th March 2026

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LETTER OF INVITATION

Swosti Premium Ltd, on behalf of Gopalpur Palm Resort (A Unit of Swosti Premium Ltd), invites sealed bids for the Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam, on a Item Rate Contract Basis for selection of a qualified agency to whom the project may be awarded.

The bid documents will be made available from 10.04.2026 10.00 am IST to 30.04.2026 5 pm IST at designated link or upon request physically from Swosti Corporate Office, Bhubaneswar or through official mail ID .Bid document can be downloaded from the website - <https://www.swostihotels.com/tenders.html>

The completed proposals shall be submitted in hard copy (physical submission) at the address specified in the bid document no later than 3:00 PM on **01.05.2026**.

Three days before the scheduled Pre-Bid Meeting the intending bidders are requested to visit the site for accessing bid document and submit their queries in written form via their official mail ids or through registered postal service addressed to Swosti corporate office.

The Pre-Bid Meeting will be held on **19.04.2025 at 12.00** PM via Zoom/Physical mode. Meeting link/Venue shall be shared subsequently.

All received proposals will be opened at **5:00 PM on 01.05.2026** in the presence of authorized representatives of the bidders (not mandatory), at the venue communicated via email.

Swosti Premium Ltd reserves the right to reject any or all bids without assigning any reason thereto and shall not be liable for any costs incurred by bidders in the preparation or submission of proposals.

All subsequent corrigenda, clarifications, or updates (if any) will be circulated through official communication only via:

gm.communications@swostihotels.com

pmc.swosti@arkitechno.com

Gopalpur Palm Resort

(A Unit of Swosti Hotels)

gm.communications@swostihotels.com

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Swosti Premium Ltd. Gopalpur Palm Resort Project,Gopalpur,Ganjam

DATED: 10.04.2026

DETAILED TENDER NOTICE

1. Last Date & Time of issue of tender documents from 10.04.2026 to 30.04.2026
2. Last Date & Time of receipt of tender 01.05.2026 upto 3.00 p.m.

G.M(B D),SWOSTI PREMIUM LTD Swosti Premium Ltd ,Bhubaneswar on behalf of Swosti Premium Ltd invites sealed item rate tenders from eligible contractors for similar works.

Name of work: **Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam,**

Estimated cost of work put to tender : Rs. 410 Lacs

Time of completion : 6 Months

Earnest Money Deposit: **Rs. 4,10,000/- (Rupees Four Lacs Ten Thousand only)** is to be submitted with tender document as earnest money. The above payment shall be made in the shape of deposit at pay order/demand draft of a scheduled bank issued in favour of **Swosti Premium Ltd payable** at New Delhi.

Works to be completed in coordination with the main Civil & MEP Interior works contractor. No extra for non-availability of fronts or coordination with main agency shall be payable on account of the same.

Tender documents can be downloaded from SWOSTI PREMIUM LTD website (www.Swosti Premium Ltd .ac.in) and submitted with non-refundable DD of **Rs. 11800/-** in favour of **Swosti Premium Ltd** as cost of tender.

- 1) The tenders shall be placed in sealed envelopes with a name of work and due date written on the envelope and addressed to the G.M(B D),SWOSTI PREMIUM LTD SWOSTI PREMIUM LTD. Complete tender documents shall be submitted by the approved contractors in **two envelopes**. **1st envelope** shall contain the earnest money in the shape of Demand Draft / Pay Order of a scheduled Bank requisite shape as per condition & eligibility criteria and cost of tender as stated above along with “Technical Bid “ and supporting documents . The **2nd** sealed envelop shall contain the ”Financial Bid” . Both the sealed envelops shall be contained in another envelop , sealed and super scribed with the “Name of the Work”, the name and detailed address of the bidder as well as contact phone number & e-mail id. This sealed envelop has to be submitted at designated place as indicated in the bid document.
- 2) The eligible contractors who have carried out similar works in Reputed Private Hotel Chain/Govt Depts/PSU/Reputed Pvt sector /MNCs are to submit the experience certificates for the works and registration certificates with Govt. Depts. if any. The said certificates along with the EMD be enclosed in Envelope-1.

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- 3) Experience of having successfully completed similar works during last seven years ending on the 31.12.2025. **The Similar works shall mean works of Minimum 600 TR capacity Water/Air cooled screw chiller.** The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum calculated from date of completion to last date of receipt of tenders.

Three similar works not less than 40 % of est.cost	Rs 160.00 lacs each Or
Two similar works not less than 60 % of est cost	Rs 250.00 lacs each Or
One similar work not less than 90 % of est cost	Rs 370.00 lacs each

The work of similar nature should have been executed under Central/State/Autonomous/Central PSU/State PSU/local authority/Reputed Hotelier Group formed under any Act in Central/State .

- 4) **The bidder should be Original Equipment Manufacturer or authorized dealers of OEM of major equipment(s) and certificate/corroborative documentary evidences are required be submitted along with the bid.**
- 5) The applications not supported with requisite experience certificates, GST registration certificate and ITCC in Envelope-1 shall not be entertained
- 6) Solvency certificate for Rs. 200 lacs from any nationalized /scheduled bank. The applicant shall submit the solvency certificate, not older than six months prior to 30th September 2025, issued by any scheduled bank, in original.
- 7) Average Annual Turnover over HVAC works should be at least Rs 800 lacs during immediate last 3 consecutive financial years ending 31st Mar 2025.
- 8) Should not have incurred any loss in the more than two years in the last five years ending 31st Mar 2025.
- 9) Company should not have been barred / blacklisted for taking up similar work in any organization- A certification to this effect on the letter head of the bidder.
- 10) Performance certificates issued by past employers must be submitted by the vendors for the works, in support of their experience.
- 11) Bidder shall furnish list of the supervisory persons and other technical persons he wishes to deploy in this job along with their experience details.
- 12) Letter of Authority for signing and negotiation of bid.
- 13) The 2nd **envelope** shall contain the financial bids including Priced Schedule of Quantities sealed,
- 14) The 1st envelop should contain Form of Tender, Conditions of Tender, Articles of Agreement, Brief Specifications, Condition of contract, Drawings all duly signed by the authorized signatory of the firms.

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1st and 2nd envelopes are to be put in a single envelope duly super-scribed the name of work, and addressed to G.M(B D),SWOSTI PREMIUM LTD and with their address. In case the tenderer does not fulfill the laid down eligibility criteria or fails to deposit the earnest money in prescribed form, financial bid shall not be opened.

Tenderers shall seal the tender after affixing their initials and put stamp on each and every page of tender document before submission. The tender of the contractor, who submits in-complete tender document or submits more than one tender for one work, shall not be considered at all.

Tenders will be received by the **G.M(B D),SWOSTI PREMIUM LTD up to 3.00 P.M on 01.05.2026** and will be opened by him or his authorized representative in the office of Registrar, SWOSTI PREMIUM LTD on the same day at **5.00 P.M.**

First the Technical Bids will be opened and screened. The bids shall be examined whether the EMD is in order and the bidder meets the minimum eligibility criteria specified above. . Those bidders whose EMD is in order, meets the minimum eligibility criteria, has submitted all the required documents and meet the technical requirements shall be considered for opening of financial bid. Conditional tenders would not be accepted. Financial bids in respect of contractors who do not fulfill above criterion shall not be opened.

15) No Xerox / certified copies of tenders shall be accepted, if submitted these tenders shall be rejected.

16) **Pre- bid meeting** - A pre bid meeting will be held as on **19th April 2026** at 12.00 Noon - Any doubts or queries of the potential bidders will be addressed during the hybrid meeting. Venue: Hotel SWOSTI PREMIUM LTD /Zoom Link.

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SECTION-1 INSTRUCTION TO BIDDERS (ITB)

1. The time allowed for carrying out the construction work will be 6 months from the 7th day after the date of written orders to commence the work.
2. The site for the work is available.
3. During execution of works, because of some unforeseen circumstances to enable him to complete the work as per terms of the contract, shall not relieve the contractor from any liability or obligations under the contract and he shall be responsible for the acts, defaults and neglects of any sub-contractor, his agents or workmen as fully as if they were the acts, defaults or neglects of the contractor, his agents or workmen.
4. The Contractor shall be required to deposit an amount equal to 3% of the tendered value of the work as performance guarantee in the form of an irrevocable bank guarantee bond of any scheduled bank or State Bank of India in accordance with the form prescribed or in the form of fixed deposit receipt etc. within 15 days of the issue of letter of acceptance. The performance guarantee shall have the validity up to 31st Jan 2027.
5. Tenderers are advised to inspect and examine the site and its surrounding at their own cost and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as is practicable), the form and nature of the site, means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risk, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at own cost all materials, tools and plants, water, electricity, access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specification of the work to be done, local condition and other factors having a bearing on the execution of the work.
6. The Accepting Authority -SWOSTI PREMIUM LTD does not bind himself to accept the lowest or any other tender and reserves to him/herself the authority to reject in whole or part, any or all of the tenders received without the assignment of any reason. All tenders in which any of the prescribed conditions are not fulfilled or for any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.

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7. Canvassing, whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractor who resort to canvassing will be liable to rejection.
8. The Accepting Authority reserves to himself the right of accepting the whole or any part of the tender and the tender shall be bound to perform the same at the rates quoted.
9. Tenders shall remain open for acceptance for a period of 60 days from the date of opening of the tenders. If any tenderer withdraws his tender before the said period for issue of letter of acceptance, whichever is earlier or makes any modification in the terms and condition of the tender which are not acceptable to the SWOSTI PREMIUM LTD , then SWOSTI PREMIUM LTD shall, without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely besides black listing of the tenderer.
10. The notice-inviting tender shall form a part of the contract document. The successful tenderer/contractor shall, sign the necessary contract documents consisting of the notice inviting tender, all the documents including additional conditions, specification and drawings, if any forming the tender as issued at the time of invitation of tender and acceptance thereof with any correspondence leading thereto within the time specified in the letter communicating the acceptance of the tender. In case of delay, the earnest money may be forfeited and the tender cancelled or the contract enforced as per the terms of the tender and the invitation to tender and the tenderer shall thus be bound by the condition of contract even though the formal agreement has not been executed and signed within the specified time by the tenderer.
11. The work shall be carried out as per general of conditions of contract (Tender Contract) and form part of the agreement/document.
12. Contract is liable to be terminated by the SWOSTI PREMIUM LTD without payment of any compensation, if subsequent to the acceptance of tender the contractor is black- listed by, or enters into partnership of any black listed contractor of the SWOSTI PREMIUM LTD or any other department, or Govt. or its, undertakings.
13. Cost of Bidding
 - 13.1 The bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.
14. Clarification of Bidding Documents
 - 14.1** A prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing/mail at the Employer's address indicated in the invitation to bid not later than 7 days before the Date of Submission of Tenders. Email- admin-project@Swosti Premium Ltd.ac.in

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15. Currencies of Bid and Payment

15.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments will be invariably made in Indian Currency (Indian Rupees.)

16. PROTECTION OF ENVIRONMENT AND OTHER LAWS:

The contractor shall take all reasonable steps to protect the environment on and off the Site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods of operation.

During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all existing enactments on environmental protection and other local Acts/ Laws/ rules made there under, regulations, notifications and bye-laws of local authorities or any other law, bye-laws, regulations that may be passed or notification that may be issued in this respect in future by the State/ Local authority.

17. Evaluation of Bids Received : Detailed at following section

For and on behalf of the
Swosti Group of Hotels, Resorts, Travels & Educations
GM Corporate Communications.
Cell- 9938244538
Email: gm.communications@swostihotels.com

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Bid Data Sheet

Bid Identification No.: SWOSTI/GPR/TENDER/CCW/07/2026-27

The Swosti Premium Ltd., invites sealed, offline bids from reputed and experienced civil construction firms for the following work on lumpsum basis contract. Project details are as under:

Tender Summary

Sl. No.	Particulars	Details
1	Name of Work	Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam, on a Item Rate Contract Basis
2	Project Location	Plot No. 182/552/617 & 184/618, Khata No. 102 (AJA), Gopalpur-on-Sea, Ganjam District, Odisha
3	Nature of Contract	Item Rate Contract
4	Estimated Project Cost	₹ 410 Lalhs (Four Hundred Ten Lakhs Only)
5	Time for Completion	06(Six) Calendar Months from date of LOA
6	Number of Packages	01 (One)
7	Eligibility	Reputed private sector entities having successfully completed similar scale works. Relevant Project Experience must include: <ul style="list-style-type: none">•IT/Office Buildings•Commercial or Hospitality Projects
8	Cost of Tender Document	₹11,800/- (Including GST)(Non-refundable, to be paid via Demand Draft(DD) in favor of "Swosti Premium Ltd.")- Including GST
9	Availability of Tender Documents	From 10.04.2025 to 30.04.2025 up to 5.00 PM – a) From the Swosti Hotels website - https://www.swostihotels.com/tenders.html
10	Seeking Queries on RFP Document(Through email/Letter)	19.04.2025 upto 3:00 PM a) E-mail id. manoj@arkitechno.com b) Address : Swosti Hotels Corporate Office: Swosti Premium, Jaydev Vihar, Bhubaneswar – 751013, Odisha
11	Pre-Bid Meeting	19.04.2025 at 12:00 Noon at Swosti Corporate Office, Bhubaneswar/Zoom Link in virtual mode
12	Last Date of Submission of Bids	28.04.2025 up to 3:00 PM (Sealed Envelopes at Swosti Corporate)
13	Opening of Technical Bids	01.05.2025 at 5:00 PM in presence of PMC & Client

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Sl. No.	Particulars	Details
14	Technical Presentation (By technically qualified bidders)	Not Applicable
15	Opening of Financial Bids	Exact date and time shall be informed to qualified bidders atleast 48 hours of date of opening.
16	Mode of Tender	Offline, Physical Submission – Two Envelope System (Technical + Financial)
17	Bid Validity	90 Days from Last Date of Submission of Bids
18	Communication Email	manoj@arkitechno.com pmc.swosti@arkitechno.com

The bids must be submitted in hard copy (manual mode) in two separate sealed envelopes contained in another sealed envelope, marked clearly as “Technical Bid” and “Financial Bid”, mentioning the name and address of bidder, superscribed with title of work put to bids, along with all documents as prescribed in the bid document hereunder.

The client reserves the right to cancel the bidding process and/or reject any or all bids without assigning any reason there to. Corrigendum to bidding process/bid document if issued, subsequent to pre-bid meeting, shall be shared directly with bidders seeking clarification on or before pre-bid meeting/ participating in pre-bid meeting via email provided by them.

Authorized Signatory

Mr. Nihar Ranjan Sahoo, GM Corporate Communications.

Swosti Group of Hotels, Resorts, Travels & Educations

Cell- 9938244538

Email: gm.communications@swostihotels.com

Gopalpur Palm Resort Project
On behalf of Swosti Premium Ltd.

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Evaluation Criteria

(Clause 1.1 of Instructions to Bidders – Gopalpur Palm Resort Project)

INTRODUCTION

- This Evaluation Criteria outlines the method by which bidders for the bids received will be evaluated based on their technical and financial qualifications, experience, project-specific understanding, organizational setup, and resource readiness.
- The evaluation will be conducted in accordance with the Instructions to Bidders (ITB) and is applicable to **Cover-I: Technical Bid**. Only those bidders who qualify under the technical evaluation will be considered for the opening and evaluation of their **Cover-II: Financial Bid**.

EVALUATION OF TECHNICAL BID (COVER-I)

The Technical Bid will be evaluated based on the following five main criteria:

Sl. No	Evaluation Criteria	Maximum Marks
a	Financial Strength	25
b	Experience in Similar Nature of Work	25
c	Working Methodology and execution of similar nature of work(DBR)	25
d	Key Personnel	25
	Total	100

Criteria/Sub-Criteria of TECHNICAL EVALUATION

Financial Strength – 25 Marks

Component	Max. Marks	Evaluation Basis
(i) Annual Financial Turnover (as per Bid Data Sheet)	20	70% marks for minimum eligibility criteria; 100% for twice the minimum. In between – on pro-rata basis.
(ii) Liquid Assets (as per Clause of Bid Data Sheet)	5	70% marks for minimum eligibility criteria; 100% for twice the minimum. In between – on pro-rata basis.

Experience in Similar Nature of Work – 25 Marks

Description	Max. Marks	Evaluation Basis
Completion of Similar Projects of Bid Data Sheet)	25	70% marks for minimum eligibility; 100% for twice the minimum. In between – on pro-rata basis.

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Methodology and Work Program – 25 Marks

Bidder shall submit a detailed Design Basis Report covering approach to execution of civil works. Assessment will be based on content, specificity, and alignment to project needs.

Component	Marks
Technical Specifications for Materials & Workmanship	10
Project Execution Schedule / Work Programme	10
Approach & Methodology (project-specific)	5
Total	25

Key Personnel – 25 Marks

The following key personnel must be proposed and CVs submitted:

Position	Qualifications & Experience	Max. Marks	Evaluation Basis
Project Manager(1 No)	B.E./B.Tech Mech/Elect with 10+ years	15	Graduation (5), Experience (Exp. 10 yrs-7 , Higher - 10)
Site Engineer-HVAC (1 No)	B.E. with 3 yrs/Diploma with 7+ years in Mech	5	Graduation (2),Dip- (1), Experience (Exp. 7 yrs-2 , Higher - 3)
Site Engineer-Elect (1 No)	B.E. with 3 yrs/Diploma with 7+ years in Elect	5	Graduation (2),Dip- (1), Experience (Exp. 7 yrs-2 , Higher - 3)

GENERAL NOTES

- Bidders must furnish all necessary supporting documentation for substantiating the information.
- Only those bidders who score **70 marks or more (out of 100)** in Technical Evaluation shall be considered for opening of their “Financial Proposal”

Enhancement Factors for Past Financial Years (for Turnover/Experience Updating):

Year Before	Enhancement Factor
One	1.10
Two	1.21
Three	1.33
Four	1.46
Five	1.61

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SECTION-2-FORMS & FORMATS

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DOCUMENTS TO BE FURNISHED BY BIDDER

1. Documents as specified in Section 1, must be submitted by the Bidder in the Formats mentioned in Section 2 along with the BID.
2. Any other document, if asked by Employer for clarification during evaluation, shall be submitted by the bidder.

CHECKLIST OF DOCUMENTS TO BE SUBMITTED IN TECHNICAL BID

	Criteria	Document to be submitted	Submitted (Yes/No)
1	Cost Of Bid Document	DD/BC	
2	EMD/ Bid Security -	In the form of BG/Bid Security fee deposit details.	
3	Written power of attorney of the signatory of the Bid to commit the Bidder(If any)	Copy of power of attorney	
4	Whether Indian firms (Y/N)	Certificate of Incorporation	
5	OEM firms with proven track record of execution of similar HVAC Projects in IT buildings, commercial complexes, hospitality projects, or high-rise structures (G+9 or above).	Relevant Certificate	
6	Constitution or legal status of Bidder	Incorporation Certificate, Partnership Deed, Trade License, MoA, AoA	
7	Place of registration	Qualification Information	
8	Principal place of business	Qualification Information	
9	Major items of construction equipment proposed to carry out the Contract	Invoices of equipment / Lease agreement/Letter of Commitment	
10	Qualifications and experience of key site management and technical personnel proposed for the Contract	Detailed CV	
11	Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past five financial years	CA Certificate along with Audited Financial report for the relevant Financial Years	
12	Evidence of adequacy of working capital for this contract [access to line (s) of credit and availability of other financial resources]; Liquid assets and / or availability of credit facilities	Banker's certificate	
13	Authority to seek references from the Bidder's bankers	Bankers Details	

[Type here]

14	Information regarding any litigation or arbitration resulting from contracts executed by the bidder in the last five years or currently under execution	List of Litigation, if any	
15	Methodology & Programme.	To be submitted	
16	Bids from Joint venture - Bids from Joint ventures / Consortiums / Association of Parties are not acceptable	NA	
17	Annual minimum turnover	Turnover from HVAC Construction works certified by chartered Accountant	
18	The Firm should demonstrate making profit	CA/ Statutory auditor certificate	
19	Should have valid PAN and GSTIN	Scan copy of valid PAN and GSTIN	
20	Experience of successful completion of works / substantial completion of works (90% of the value of the contract to be considered as substantial completion) as referred in Bid Data Sheet C I.2.3).	Completion Certificate from Competent Authority mentioning all the details as per Bid Data Sheet/TDS Certificate for Pvt Sector Project	
21	Bid Validity Undertaking	Undertaking	
22	Affidavit	Affidavit by the bidder duly signed by the Notary Public and as specified in Section 2,	
23	Design Basis Report	NA	
24	Certificate of No Relationships	As per format given in Section-2 of the tender document	
25	Information Regarding Any Conflicting Activities and Declaration Thereof	As per format given in Section-2 of the tender document	
26	Proposal for Sub-Contract	To be mentioned	

[Type here]

Undertaking by Tenderer

I/We have read and examined and understood the notice inviting tender, schedules, Specifications applicable, drawings & Designs, General Rules and Directions, Conditions of Contract, clauses of contract, special conditions, & all other documents and Rules referred to in the conditions of contract and all other contents in the tender document for the work.

I / We hereby tender for the execution of the work specified for the SWOSTI PREMIUM LTD within the time specified in schedule of quantities and in accordance in all respects with the specifications, designs, drawings and instructions in General Rules and Directions and Conditions of contract and with such materials as are provided for, by, and in respect in accordance with, such conditions so far as applicable.

We agree to keep the tender open for Ninety (90) days from the due date of its opening and not to make any modifications in its terms and condition.

A sum of Rs.....Rupees.....

.....)
has been deposited in demand draft of a scheduled bank issued by a scheduled bank as earnest money. If I / we, fail to furnish the prescribed performance guarantee within prescribed period, I / we agree that the said G.M.(BD), SWOSTI PREMIUM LTD or his successors in office shall without prejudice to any other right or remedy, be at liberty to forfeit the said earnest money absolutely. Further, if I / we fail to commence work as specified, I / we agree that Director, SWOSTI PREMIUM LTD or his successors in office shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the said earnest money and the performance guarantee absolutely, otherwise the said earnest money shall be retained by him towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be ordered, up to maximum of the 25 percentage and those in excess of that limit at the rates to be determined in accordance with the terms of contract. Further, I / We agree that in case of forfeiture of earnest money or both Earnest Money & Performance Guarantee as aforesaid, I / We shall be debarred for participation in the re-tendering process of the work.

I / We hereby declare that I / we shall treat the tender documents drawings and other records connected with the work as secret / confidential documents and shall no communicate information / derived there from to any person other than a person to whom I / we am / are authorized to communicate the same or use the information in any manner prejudicial to the safety of the State.

Dated.

Witness:

Address:

Signatures of Contractor

Postal Address

Occupation:

[Type here]

LETTER OF SUBMISSION

The GM Corporate Communications.
Swosti Group of Hotels, Resorts, Travels & Educations
Cell- 9938244538
Email: gm.communications@swostihotels.com
Gopalpur Palm Resort Project
On behalf of Swosti Premium Ltd

Sir,

.I/We, the undersigned, have read and examined in detail, the specifications and all bidding documents and hereby declare that:

Price and Validity

1. All the rates quoted in our proposal are in accordance with the terms and conditions as specified in the bid document. All the prices and other terms and conditions of this proposal are valid for a period of 90 calendar days from the date of opening of bid.
2. We do hereby confirm that our bid prices include all taxes/levies. GST indicated separately.
3. We hereby declare that if any tax law is altered, we shall pay the same.
4. The quoted rates are inclusive of ESI , PF and Green Tax no extra on such heads would be payable on such account.

Earnest Money

We have enclosed EMD in the form of demand draft no..... , dated.....favoring Swosti Premium Ltd. payable at Bhubaneswar issued / drawn on ... Bank for Rs.__/- (Rupees ___Thousand only), as desired.

Deviations

We declare that all the works shall be performed strictly in accordance with the technical specifications and other tender conditions with no deviations.

Qualifying Data

We confirm that all information/data have been submitted as required in tender document.

We hereby declare that our proposal is made in good faith, without collusion for fraud and the information contained in the proposal is true and correct to the best of our knowledge and belief. I/We agree that in case any information is found to be incorrect the tender is liable to be rejected at any point of tendering process.

Bid submitted by us is properly sealed and prepared so as to prevent any subsequent alteration and replacement.

We understand that you are not bound to accept the lowest or any bid you may receive.

Thanking you,

Yours faithfully,

(Signature and seal of Tenderer with name, designation and contact no.)

[Type here]

NON-BLACK LISTING DECLARATION

FORMAT OF UNDERTAKING, TO BE FURNISHED ON COMPANY LETTER HEAD WITH REGARD TO BLACKLISTING/ NON- DEBARMENT, BY ORGANISATION

UNDERTAKING REGARDING BLACKLISTING / NON – DEBARMENT

To,
SWOSTI
PREMIUM LTD
Bhubaneswar

We hereby confirm and declare that we, M/s -----, is not blacklisted/ De-registered/ debarred by any Government department/ Public Sector Undertaking/ Private Sector/ or any other agency for which we have Executed/ Undertaken the works/ Services during the last 5 years.

Signature of Contractor

With stamp

[Type here]

GENERAL INSTRUCTIONS FOR SITE VISIT

I, , aged years, son/daughter of , presently residing at and authorized by (name of tenderer) (“Tenderer”) to solemn this affidavit on behalf of the Tenderer, solemnly affirm on oath as hereunder:

The Tenderer confirms that the Tenderer has duly undertaken the visit of the proposed project site of SWOSTI PREMIUM LTD located at Gopalpur ,Ganjam

The Tenderer has inspected and examined its surroundings and has satisfied itself about the site conditions and site logistics. The Tenderer confirms that it is aware of the ground conditions and nature of the site, means of access to the site and the accommodation area required for establishing the labour camp. The Tenderer agrees and confirms it shall be solely responsible for arranging and maintaining the afore- mentioned at its own cost including all materials, tools & plants, water, electricity, access, facilities for workers and all other services required for executing the Work unless otherwise specifically provided for in the contract documents.

The Tenderer confirms and agrees that the submission of the tender implies that the requisite site visit has already been undertaken and that the Tenderer has acquainted itself with the local conditions and other factors having a bearing on the execution of the Work.

DEPONENT VERIFICATION

I, , aged years, son/daughter of , presently residing at and authorized by Tenderer verify that the information mentioned above is true and correct to the best of my knowledge and belief.

DEPONE

LETTER OF ACCEPTANCE

(To be issued to the successful bidder on the letterhead of Swosti Premium Ltd.)

[Date: _____]

To,

[Name and Address of the Contractor]

Subject: Letter of Acceptance for Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam,, on a Lump sum Contract Basis)

Dear Sir(s),

This is to notify you that your Bid dated _____ for execution of the following work on a Lumpsum basis:

“Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam,, on a Item Rate Contract Basis)”

for the Contract Price of Rs. _____ (Rupees _____ only), as corrected and modified¹ in accordance with the Instructions to Bidders, is hereby accepted by Swosti Premium Ltd.

We note that as per your bid,
 You do not intend to subcontract any component of work
or

You propose to employ [Insert Name of Sub-Contractor] as sub-contractor for executing [Insert Work Component]

(Delete whichever is not applicable)

You are hereby requested to furnish a detailed Work Programme along with milestone-wise activity chart and cash flow forecast (S-curve) as per the Bid Data Sheet within 14 (fourteen) days from the issue of this Letter of Acceptance (LoA).

Further, you are required to furnish the Performance Security as specified in the Bidding Documents for an amount of Rs. _____, in the form prescribed, within 21 (twenty-one) days of receipt of this Letter of Acceptance.

Failure to comply with the above conditions may result in actions as specified in Clause 23 and 24 of the Bid Data Sheet.

We look forward to the successful execution of the project.

Yours faithfully,

Authorized Signatory
Swosti Premium Ltd.
Bhubaneswar

NOTICE TO PROCEED WITH THE WORK

(To be issued on Letterhead of Swosti Premium Ltd.)

[Date: _____]

To,
[Name and Address of the Contractor]

Subject: Notice to Proceed – Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam, on a Item Rate Contract Basis)

Dear Sir(s),

Pursuant to your furnishing of the required Performance Security in accordance with Clause of Bid Data Sheet, and the execution of the Contract Agreement for the work titled:

“Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam, on a Item Rate Contract Basis”

at a Bid Price of Rs. _____ (Rupees _____ only),
you are hereby instructed to proceed with the execution of the said works effective immediately, in strict accordance with the terms and conditions of the contract documents.

We trust that you will mobilize your resources promptly and commence the work at site without delay as per the agreed programme and milestones.

Wishing you a successful execution.

Yours faithfully,

Authorized Signatory
Swosti Premium Ltd.
Bhubaneswar

PERFORMANCE BANK GUARANTEE

To

_____ [name of Client]
_____ [address of Client]

WHEREAS _____ [name and address of Contractor] (hereafter called "the Contractor") has _____ undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ [name of Contract and brief description of Works] (hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of _____ [amount of guarantee]* _____ (in words), such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between your and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall also be operatable at our _____ Branch at Bhubaneswar, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of Odisha Bridge & Construction Corporation Ltd details of which is as under:

Sl No.	Particulars	Details
1	Name of Beneficiary	Swosti Premium Ltd
2	Name of Bank	Union Bank Of India
3	Account No	128713100000061
4	IFSC Code	UBIN0578827

This guarantee shall be valid until 28 days from the date of expiry of the Defect Liability Period. Signature and Seal of the guarantor _____

Name of Bank _____ Address _____ Date _____

* An amount shall be inserted by the Guarantor, representing the percentage the Contract Price specified in the Contract including additional security for unbalanced Bids, if any and denominated in Indian Rupees.

BID SECURITY– Cover-IV

Bid Security (EMD): 8,50,000.00 INR

Affidavit (on Non-Judicial Stamp, attested by Notary Public)

Declaring authenticity of all submitted information and non-involvement in any corrupt or fraudulent practice.

Authorized Signature: _____

Name & Title: _____

Name of the Bidder: _____

Company Stamp/Seal

BANK CERTIFICATE

(To be issued by the Bidder's Bank on official letterhead and submitted by the Bidder in Cover-IV)

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s. [Insert Name of Bidder] is a reputed company with good financial standing and banking conduct.

If the contract for the work, namely:

“Construction of Gopalpur Palm Resort – Core Civil Works (Lumpsum Package)”

is awarded to the above-mentioned firm, we confirm that we shall be in a position to provide overdraft / cash credit / fund-based credit facilities to the extent of:

₹ [Insert Amount in Figures and Words]

to meet their working capital requirements for executing the said contract.

SI No.	Particulars	Details
1	Name of Beneficiary	Swosti Premium Ltd
2	Name of Bank	Union Bank Of India
3	Account No	128713100000061
4	IFSC Code	UBIN0578827

INFORMATION REGARDING ANY CONFLICTING ACTIVITIES AND DECLARATION THEREOF

(To be submitted on Bidder's Letterhead)

To,
The G M (B.D)

Swosti Premium Ltd.
Bhubaneswar

Subject: Declaration Regarding Conflicting Activities

Dear Sir,

I, the undersigned, hereby declare that our firm/company is not engaged in any activities that can be termed as conflicting in nature with respect to this tender for the project titled:

"Supply, Installation, Testing & Commissioning of Water Cooled Screw Chillers and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam, on a Lump sum Contract Basis)"

I also acknowledge that in case of any misrepresentation or concealment of facts related to this declaration, our proposal and/or contract shall be liable for rejection/termination by the Client, and the decision shall be binding upon us without any claim whatsoever.

Authorized Signatory: _____

Name & Designation: _____

Name of the Bidder: _____

Stamp/Seal: _____

Date: _____

Communication Address: _____

Note:

Conflicting activities refer to any potential conflict of interest arising from prior, current, or proposed agreements, engagements, or affiliations with the Client that may impair the bidder's objectivity, integrity, or impartiality in the execution of the project.

AFFIDAVIT

[To be submitted by the bidder in a non-judicial stamp paper duly signed by the Notary Public]

1. I, the undersigned, do hereby certify that all the statements made in the required attachments are true and correct.

2. The undersigned also hereby certifies that neither our firm M/s.....
.....have abandoned any work on building in India nor any contract awarded to us by the State of Odisha for such works have been rescinded, during last five years prior to the date of this bid.

3. The undersigned hereby authorize(s) and request(s) any bank, person, firm or corporation to furnish pertinent information deemed necessary and requested by the Department to verify this statement or regarding my (our) competence and general reputation.

4. The undersigned understand and agrees that further qualifying information may be requested and agrees to furnish any such information at the request of the Department/ project implementing agency.

Authorized Signature: Name & Title of Signatory:
Name of Bidder :

SECTION-3

BOQ,SPECIFICATIONS& TENDER DRAWINGS :

These Particular are to be read in conjunction with other documents issued along with tender. In case of any discrepancy between Design drawings, General conditions or Bill of quantity, Following order of preference shall be applicable.

- BOQ
- Specification
- Tender drawings

The contractor shall refer the tender drawings attached at end of this section.

The contractor shall refer the following annexure while bidding and will read them in conjunction with specifications as well as bill of quantity

- | | | |
|---------------|---|--------------------------|
| Annexure - I | : | Design Criterion |
| Annexure -II | : | List of approved makes |
| Annexure -III | : | Codes and Standards |
| Annexure -IV | : | Technical Specifications |
| Annexure -V | : | Technical Data Sheets |

1. WORK DESCRIPTION

The work shall be strictly carried out as per the scope listed in this document and in accordance with the specifications. The equipment & material supplied at site will also be selected out of the list of approved makes. Bill of quantity provided with the document is for contractor guidance. It is expected that after award of work, contractor shall prepare shop drawings for approval by the Consultant & Client representative and also submit Technical documentation duly identifying shortlisted make of material/equipment along with its data sheets. Actual ordering shall be based on approved shop drawings & documents.

The work at site shall comply with the approved shop drawings and will meet the satisfaction of Client representative. The contractor shall be required to demonstrate satisfactory operation of entire system (including client supplied equipment installed by contractor) and furnish the required labour, material & tools to install & commission the system.

The broad scope of work for proposed firefighting system covered under this contract shall include supply, installation, testing & commissioning of the following:

- a) Fire Fighting Pump room
- b) Internal Hydrant
- c) External Hydrant
- d) Sprinkler Hydrant
- e) Water Curtain
- f) Hand Held Fire Extinguishers.
- g) Panel & Room Flooding System.
- h) The scope also includes an electrical panel as applicable.
- i) Other Miscellaneous Items.
- j) Wiring & earthing from MCC panels to various firefighting systems, control wiring & interlocking.
- k) Any minor chasing/chipping / civil masonry.
- l) Balancing, testing & commissioning of the entire system.

Besides the above, the contractor shall also be required to undertake the following:

- a) Obtain approval from Local Authorities prior & post installation for the operation of the system.
- b) Minor civil works which include making openings in walls & slabs and making good of the same.
- c) Commissioning of the plant including test reports to demonstrate satisfactory working prior to handing over.
- d) Provide as-built drawings, handing over documents, Test reports, list of recommended spares, operation & maintenance manual for the entire system.
- e) Training of Client's staff.

2. SITE MANAGEMENT

The Contractor shall be required to provide the following staffing for the project:

- a) Design Engineer who will work with Consultant for getting shop drawings, technical submittal, and variation in quantity statement approved.
- b) Procurement team.
- c) Full-timeline dedicated Engineer (minim10-year experience) & one supervisor posted at site.

The contractor shall submit organization chart and CV prior to starting work at site.

The Contractor shall have required stores, tools & plant, security, and facility to transport materials to the place of installation for speedy execution of work.

3. REGULATIONS & PERMITS

Prior to starting work at site, the contractor shall obtain required permits/ licenses required for satisfactory execution and operation of the installation. All receipted amounts shall be reimbursed by Client on production of proof of payment by the contractor.

The executed work shall strictly confirm to applicable laws, regulations and Indian Standards which become applicable. In case the specifications and drawings contained in this document call for higher standard than those required by prevailing regulations, then these specifications & drawings shall become applicable. However, in case of any conflict or violation between the document/drawings and prevailing laws, then the applicable laws & regulations shall be governing & binding.

4. SHOP DRAWINGS

A set of design drawings listed in this document are available at the Consultant's office and may be issued with the tender document. These design drawings are for the reference of the contractor and indicate the proposed arrangement and the extent of work covered in the contract. The data given in the drawings and specifications is as exact as could be procured, but its accuracy is not guaranteed. The contractor cannot execute work or scale these drawings for reference.

The following shall be the procedure followed by a contractor while preparation of shop drawings:

- a) The contractor shall refer to the design drawings for understanding the scope and proposed routes to be followed during execution.
- b) Collate the latest architectural backgrounds from the Client representative / Architect / Consultant.
- c) Examine all related services drawings but not limited to structural, plumbing, electrical, HVAC, Interior, landscape and others including as-built works before starting the work. Any discrepancy must be report to the Client's site representative in writing and obtain approval for go-ahead.
- d) Within one week of the award of work, the Contractor shall prepare a list of shop drawing along with a submission schedule for approval of Client representative/Consultant. The list of drawings must include layouts for Plant room, Pump room, Typical drawings showing the exact location of supports, flanges, bends, tee connections, and reducers, detailed piping drawings showing the exact location and type of supports, valves, fittings etc.; electrical panels inside/outside views, power and control wiring schematics, cable trays, supports and terminations.

Maximum headroom shall be maintained at all points and in case the same is inadequate, then written approval from the Client representative must be obtained prior to execution at site.

These shop drawings shall depict information required to complete the Project as per specifications and as required by the Consultant/Client representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings.

Where the work under this contract is proposed to be installed in close proximity or is interfering with other trades, then based on client representative/consultant directions, the contractor shall prepare all services coordinated working drawings and sections at a suitable scale (not less than 1:50), clearly showing proposed installed in relation to the work of other trades.

- a) The contractor shall thereafter furnish six sets of detailed shop drawings to Client representative/Consultant for obtaining comments/approval. The Contractor will make unlimited number of re-submissions of shop drawings unless Client representative/Consultant/Architect approval is obtained.
- b) The Contractor will thereafter submit six sets of final shop drawings to the Client representative for their exclusive use and all other agencies.
- c) No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment/installation.

- d) In case installation is carried out without following above process or obtaining a waiver to follow the procedure from Client representative, the work shall be rejected and contractor shall rectify the same at their own cost.
- e) Shop drawings shall be submitted for approval minimum four weeks in advance of planned delivery and installation of any material to allow Client representative/Consultant ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved program.

Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.

5. TECHNICAL DOCUMENTATION

The contractor prior to supplying material at the site will submit the following documentation to the Consultant/Client representative for approval:

- a) Manufacturers drawings, catalogues, pamphlets and other documents in triplicate. Each item shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.
- b) Samples of all materials shall be submitted to the Client's site representative prior to procurement. These will be submitted in two sets for approval and retention by Client's representative and shall be kept in their site office for reference and verification till the completion of the Project. Wherever directed, a mockup or sample installation shall be carried out for approval before proceeding for further installation.
- c) Where the contractor proposes to use an alternate make or model of equipment other than that specified, all new drawings and detailing required thereafter shall be prepared by the contractor at his own expense including any re-design required for other discipline/trade. Any delay on such account shall also be at the cost of and consequence of the Contractor.

Contractor to refer Annexure –I for list of approved makes & materials for this project.

6. VARIATION IN QUANTITY STATEMENT

After approval of major & relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement. This statement must be submitted prior to completing the ordering of equipment and should identify imported/local materials in this contract as well as proposed spares/tools. The Consultant shall provide a recommendation to the Client representative for acceptance of an anticipated variation in contract amounts and also advise Client to initiate action for procurement of spare parts and tools at the completion of the project.

7. QUALITY ASSURANCE

The contractor is to ensure that all materials and equipment supplied shall be new and of the best available quality conforming to the relevant Indian Standard Specifications and to these specifications. Makes shall be strictly in conformity with list of approved manufacturers as per Annexure - I. Owners reserve the right to reject any item which in their assessment is second hand

Any deviations from the above shall be clearly highlighted prior to supply and shall be brought to the notice of the Client representative/Consultant for further instructions in the matter.

Prior to starting execution work at the site, the Contractor shall verify the sufficiency of the size of the shaft openings, clearances, and ceiling spaces for proper installation. Failure to communicate insufficiency of any of the above shall constitute Contractor acceptance of the same. The Contractor shall locate all equipment in fully accessible locations which can be easily serviced, operated or maintained. Valve or other devices

requiring attendance shall be finalized and communicated in sufficient time. Failing this, the Contractor shall make all the necessary repairs and changes at own expense. Access panel shall be marked.

8. WORKS NOT COVERED UNDER THIS CONTRACT

Following works are excluded from the scope under this contract. These shall be executed by respective contractor in accordance with approved shop drawings where these details must be highlighted. However, contractor shall be responsible for providing details and thereafter supervision to ensure satisfactory & timely execution of these associated items as they have a bearing on this contract.

Civil Works

- a) RCC/PCC Foundations for major equipment only.
- b) Construction of tanks & sumps, Valve chamber including water proofing.
- c) Masonry drains channels and sumps in plant room.
- d) Core cutting in slabs / floors and wall work.
- e) Any major chasing/chipping/civil masonry work.

9. INTEGRATION WITH BUILDING AUTOMATION SYSTEM

The scope of Firefighting Contractor shall include the following for the interface to Building Automation System and no additional cost shall be paid for providing the interface feasibility.

- a) Stop/Manual/ Auto switches along with potential free contacts for monitoring the manual operation status, to be provided for those equipment whose start / stop is controlled by Building Automation System.
- b) Potential free 'NO' contacts for monitoring 'Run' status of equipment wherever required.
- c) Necessary contactor with potential free contacts and Stop/Manual/ Auto switches to be provided for all equipment wherever the starter is not provided and which requires starting / stopping through Building Automation System.
- d) Sockets /Nipples including shut-off valve for mounting sensors/transmitters on pipe lines.
- e) The space provision in all the equipment panel (MCC) for mounting Current/ Potential transformers & transducers and power supply to the transducer shall be provided by the Firefighting contractor. Separate current transformers shall be provided by Firefighting contractor for monitoring current / KWH (wherever required) through BAS.
- f) The installation of current transformer & Transducer along with wiring between Current Transformer & Transducer up to the terminal block shall be provided by the Firefighting contractor. All transducers shall be supplied by BAS contractor.
- g) The low voltage BAS Cables shall be brought up to the electric panel by BAS contractor and all terminations into the electrical panels shall be made by Firefighting contractor after satisfying himself of the wiring system. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the Firefighting system, lies solely with the contractor.
- h) All necessary Hardware/ Software shall be made available by the Firefighting Contractor on the Microprocessor based panel for the integration of such panel to Building Automation System for remote monitoring / controlling of marking / equipment thru BAS.

10. TESTING, ADJUSTING AND BALANCING

Balancing of all water systems and all tests as called for the Specifications shall be carried out by the contractor through a specialist group, in accordance with the Specifications and ASPE / ASHRAE Guide lines and Standards. Performance test shall consist of three days of 10 hour each operation of system for each season. Cost of performance witness test of major equipment such as pumps, equipment, panels etc. at factory with two personnel from Owners / Consultant shall be included.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Owner's site representative. All tests shall be carried out in the presence of the representatives of the Architect / Consultant and Owner's site representative.

11. COMPLETION CERTIFICATE

On completion of the installation, a certificate shall be furnished by the contractor, counter signed by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority.

The contractor shall be responsible for getting the entire installation duly approved by the local authorities concerned, and shall bear expenses if any, in connection with the same.

12. AS-BUILT DRAWINGS

Contractor shall submit following as-built drawings as and when work is completed:

- a) Six set of hard copies of all as-built drawings duly corrected and incorporating any modifications during execution.
- b) Two set of pen drive containing the drawings.
- c) Position of all sanitary fixtures.
- d) Runs of all water lines with diameters on all floors and vertical risers / drops.
- e) Runs of all soil, waste, vent & rain water piping with diameters on all floors and vertical stacks.
- f) Position and sizes of all type of control valves and all other plant and equipment.
- g) Position of cleaning eye / access doors and opening panels in soil/waste disposal system.
- h) Original installation and Maintenance manual of all types of equipment.
- i) Location of all mechanical equipment with layout and piping connections.

13. MAINTENANCE MANUAL

Upon completion and commissioning of works, the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and Client's site representative and two for Clients Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment. The manuals shall include:

- a) Description of the work carried out / installed.
- b) Operating instructions.
- c) Maintenance instructions including procedures for preventive maintenance.
- d) Manufacturers catalogues.
- e) Spare parts list.
- f) Trouble shooting charts.
- g) Drawings
- h) Type and routine test certificates of major items.

Details of the entire bought out item should be part of this maintenance manual.

14. ON-SITE TRAINING

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labor and helpers for operating the entire installation for such periods so as to enable the Client's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Client's personnel in the operation, adjustment and maintenance of all equipment installed.

15. DEFECTS LIABILITY PERIOD

Complaints

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 10 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

Repairs

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Client.

16. UPTIME GUARANTEE

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall and no reimbursement shall be made for the extended period.

17. OPERATION & MAINTENANCE CONTRACT

Contractor may be required to carry out the operation of the installation during and after the defects liability period. Further, it may also be required to carry out all-inclusive maintenance of the entire system for a period of four years beyond the defects liability period.

Operation Contract:

It will involve round the clock operation for 24 hours a day wherein work will include but not limited to operation of installation, maintaining log books, complain register and summary of operation.

The terms of payment shall be monthly at the end of each month on pro-rata basis.

All Inclusive Maintenance Contract:

The work will involve routine preventive maintenance with monthly status report. Entire installation shall be painted every two years. 98% uptime of all systems is expected under this contract wherein up time shall be assessed every month and in case of shortfall during any month the contract shall be extended by a month. No reimbursement shall be payable for the extended period.

Adequate number of persons to the satisfaction of the Client representative shall be provided including relievers wherein statutory compliances such as of EPF, ESIC and other applicable labour legislations shall be to contractor account. No overtime shall be payable. Routine shut downs shall be permitted with prior permission of the Owner.

Payment shall be Quarterly at the beginning of each quarter on pro-rata basis.

ANNEXURE – I
List of Approved Makes of Fire Fighting
FIRE FIGHTING

S.NO	Equipment/Material	Approved Manufacturer Name
1.	Fire / Sprinkler Main Pump / Jockey	Kirloskar Lubi Wilco - Mather & Platt
2.	Diesel Engine	Cummins Greaves Kirloskar
3.	Motor	ABB Bharat Bijlee Kirloskar Siemens Hindustan Motors Crompton Greaves Lubi
4.	G.I. / M.S. Pipes (IS: 1239 / Is: 3589)	Tata Steel Jindal (Hissar) Prakash Surya Goel Pipes
5.	Standard M.S. Fittings	Seamless Fittings Pipeline Products United Forge
6.	DI / CI / Forged Steel Fittings	Jainsons Industries VS Unik Zoloto M DRP-M Leader United Forge
7.	C.I. (Class L.A.) Pipes	Electro Steel Calcutta Kapilansh Kesoram Calcutta
8.	RCC Pipe	Himalaya Spun Pipe Co. Pragati Concrete Udyog Laxmi Sood & Sood Jain & Co Indian Hume Pipes
9.	DI MH Cover & Frame	Neco BIC Kapilansh Plasma Fibrocast (FRP)
10.	Paints	Asian Berger J&N
11.	Double / Single Headed Landing Valve (Class-A)	Newage Surendra Nagar Swati Fire Shah Bhogilal Minimax

12.	Fire Hose	Newage Surendra Nagar Minimax Swati Fire Shah Bhogilal Newage Mumbai
13.	First Aid Hose Reel (Lpcb Approved)	Newage Surendra Nagar Minimax Swati Fire Shah Bhogilal
14.	Branch Pipe	Newage Surendra Nagar Minimax Swati Fire Shah Bhogilal
15.	Fireman Axe	Newage Surendra Nagar Minimax Safegaurd Kalpex Swati Fire Shah Bhogilal
16.	Fire Extinguishers	Minimax Cease Fire FireMech Kanex
17.	Hose Reel Drum (Isi Marked) (Class-A)	Newage Surendra Nagar Minimax Swati Fire Shah Bhogilal
18.	Siamese Breaching Connection / Fire Service Inlet Draw Out Connection	Newage Surendra Nagar Minimax Swati Fire Shah Bhogilal
19.	Fire Buckets	Newage Surendra Nagar Minimax Safegaurd Kalpex Swati Fire Shah Bhogilal
20.	Sprinkler Heads	Victaulic Tyco Viking
21.	Flexible Drop Connection (UI Listed)	Tyco Viking Victaulic
22.	Pipe Protection Wrapping	IWL – Pypkote Rustech – Coatek STP
23.	Pipe Clamp & Supports	Fischer Hilti Mupro Wuerth (Wablay) Gripple GPL
24.	Seismic Supports	Gripple Hilti Mupro Fischer Wuerth (Wablay)

25.	GM / Forged Brass Valves	Cim Sant Zoloto SKS LP Leader DRP
26.	Air-Release Valve	Cim Sant Honeywell Leader Zoloto SKS
27.	Ball Float Valve	Esseti Hbd Zoloto Leader Lehry
28.	Mechanical Seal	Burgmann Sealol
29.	Couplings	Lovejoy Dunlop
30.	Pressure Gauge	Emerald Fiebig H Guru
31.	Welding Rods	Ador Esab Advani
32.	Fastner	Fisher Hilti Mupro Wurth (Wablay)
34.	Fire Sealant /Fire Stopper	Hilti Armacell Wurth (Wablay) 3M
35.	Foot Valve	Kirloskar Normex
36.	Panel Gas Suppression System	Gunnebo Minimax Gmbh Ceasefire FireMech Siemens Honeywell Kanex
37.	Grooved coupling & fitting	Victaulic Shurjoint Gruvlok
38.	Inspector's Test Assembly	Victaulic Shurjoint Gruvlok
39.	Butterfly / NRV Valve / Sluice Valve / PRV I	Victaulic Shurjoint Gruvlok
40.	Y Strainer	Victaulic Shurjoint Gruvlok
41.	Deluge Valve	Victaulic Shurjoint Gruvlok

42.	Installation Control Valve	Victaulic Shurjoint Gruvlok
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ANNEXURE – I
List of Electrical Approved Makes

S. No	Equipment/Material	Approved Manufacturer Name
1.	LT Panels & Distribution Boards	SPC Electrotech Tricolite Industries Ambit Switchgear Advance Panels Shivalic Control
2.	Air Circuit Breakers / Moulded Case Circuit Breaker / MPCB / Contactors	C&S ABB Mitsubishi Legrand Siemens Schneider Electric L&T
3.	Sandwich Busduct / Rising Main	Schneider Legrand C&S Anant Power Siemens
4.	Final Distribution Boards / MCB/RCCB	Legrand Hager ABB L&T C&S Siemens Schneider Electric
5.	Control Transformer / Potential Transformers (Epoxy Cast Resin)	Automatic Electric Gilbert & Maxwell Precise Pragati Matrix Kappa Newtek
6.	Indicating Lamps LED type and Push Button	Schneider Electric Siemens ESBEE ABB
7.	Digital Meters	Siemens Schneider Electric ABB L&T Secure Trinity Neptune
8.	HT / LT Cables	Polycab Bonton Grandlay KEI Finolex Apar
9.	Termination kits	3M Raychem
10.	Double Compression Cable Glands with earthing links	Dowells Comet Baliga

11.	Bimetallic Cable Lugs	Dowells Comet Cosmos Baliga
12.	PVC Insulated Wires	RR Kabel Bonton Batra Henlay Polycab KEI Finolex Grandlay Avocab Apar Rajnigandha
13.	Terminal Blocks	Connect well Elmex Wago Phoenix
14.	Industrial Socket outlets	Siemens Schneider Legrand Hager Cape Electric Mennekes
15.	Cable Trays & Raceways	Profab Indiana Gratings Advance SMC Niedex
16.	Accessories for Supporting system	Hilti Fisher Hira
17.	Fire Sealant & Paints	3M Hilti
18.	Insulating Mats	DL Miller & Co. Premier Polyfilm Ltd RMG Polyvinyl India Ltd
19.	Earthing & Lightning Protection System	Allied Power Erico Dehn Obo Betterman JMV
20.	Capacitors & APFC Relay	Epcos Schneider Electric Neptune Shreem P2P
21.	Metal Conduit & Accessories	BEC AKG NIC
22.	PVC Conduit & Accessories	BEC AKG Polypack Precision
23.	Switch & Sockets (Range as per approved sample only)	Crabtree Northwest Schneider Honeywell Legrand C&S

		Indoasian
24.	LED Light Fixtures & Drivers (Range as per approved sample only)	Opple Philips Trilux Wipro Havells Legero Lumvel Regent
25.	LED Chip	Cree Osram Lumileds Seoul Nichia
26.	Ceiling Fan / Exhaust Fan	Havells Crompton Greaves Bajaj Usha
27.	Cat 6/6A cables (for BMS, Electrical ELV services only)	Amp Molex Panduit Schneider Fusion Polymer
28.	Telephone cables	Delton Cables Finolex Polycab Bonton Fusion Polymer
29.	UPS	Emerson Numeric APC Fujitec Reillo Delta
30.	Batteries SMF	Exide Amar Raja Global (Rocket) Panasonic Enersys
31.	Busbar	Hindalco
33.	Polycarbonate junction box	Hensel Clipsal
34.	Lighting Poles	Mayfair Bajaj Keselec
35.	Aviation Obstruction Light	Bajaj Binay Actos
36.	Battery Charger	Exide Nelco Logicstat Min Max Electrical Chhabi Electricals
37.	FS Cables	Bonton Fusion Polymer Frtek AFW Leoni

		Batra Henlay
38.	Gas Suppression System for Panels	Kanex Minimax Siemens Honeywell SVS Life Safety JCI

Annexure – II
Part List of Codes & Standards
List of bureau of Indian Standards and Other
International Codes

All equipment, supply, erection, testing and commissioning shall comply with the requirements of Indian Standards and the code of practices given below. All equipment and material being supplied by the contractor shall meet the requirements of IS and other specified.

Tariff advisory committee's regulation (fire insurance), electrical inspectorate and Indian Electricity rules, and other Codes / Publications as given below:

Fire Fighting	
IS 8757:2021	Glossary of terms associated with fire safety
IS 884:1985	Specification for First-Aid Hose-Reel For Fire Fighting
IS 901:2017	Specification for couplings, double male and double female instantaneous pattern for firefighting.
IS 902:1992	Specification for Suction Hose Couplings For Fire Fighting Purposes
IS 903:1993	Specification for fire hose delivery couplings, branch pipe, nozzles and nozzle spanner.
IS 904:1983	Specification for 2-Way And 3-Way Suction Collecting Heads For Fire Fighting Purposes
IS 907:1084	Specification for suction strainers, cylindrical type for firefighting purpose.
IS 908:1975	Specification for fire hydrant, stand post type.
IS 909:1992	Specification for underground fire hydrant.
IS 636:2018	Non-percolating flexible firefighting delivery hose.
IS 7673:2004	Fire Fighting Equipment - Glossary of Terms
IS 937:1981	Specification for washers for water fittings for firefighting purposes.
IS 1641:2013	Code of practice for fire safety of buildings (general): General principles.
IS 1642:2013	Code of practice for fire safety of buildings (general): Details of Construction.
IS 1643:2013	Code of practice for fire safety of buildings (general): Exposure hazard.
IS 1644:2013	Code of practice for fire safety of buildings (general): Exit requirements and personal hazard.
IS 1646:2015	Code of practice for fire safety of buildings (general): Electrical installations
IS 2871:2012	Specification for branch pipe, universal for firefighting purposes.
IS 2930:1980	Functional requirements for hose laying tender for fire brigade use.
IS 5290:1993	Specification for landing valves.

IS 8090:1976	Specification for Couplings, Branch Pipe, Nozzle Used in Hose Reel Tubing for Fire Fighting
IS 8442:2008	Stand post type water and foam monitor for firefighting -Specification
IS 9972:2002	Specification for Automatic Sprinkler Heads for Fire Protection Service
IS 11101:1084	Specification for extended branch pipe for fire brigade use.
IS 12349:1988	Fire protection-Safety sign.
IS 12407:1988	Graphic symbols for fire protection plan.
IS 9668:1990	Code of practice for provision and maintenance of water supplies and fire fighting
IS 3844:1989	Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises
IS 12585:1988	Thermoplastic Hoses (Textile Reinforced) for Water - General Purpose
IS 10221:2008	Coating and wrapping of underground mild steel pipelines - Code of practice
IS 15105:2021	Design and installation of fixed automatic sprinkler fire extinguisher system code of Practice.
IS 3624:1987	Bourdon tube pressure and vacuum gauges.
IS 1239:2004	Mild steel tubes, tubular and other wrought steel fittings.
IS 3589:2001	Steel Pipes for Water and Sewage (168.3 to 2 540 mm Outside Diameter)
IS 6392:2020	Steel pipe flanges.
IS 778:1984	Copper Alloy Gate, Globe and Check Valves for Waterworks Purposes
IS 4477	Recommendation for methods of measurement or fluid flow is means of orifice plates and nozzles.
IS 732:2019	Code practice for electrical wiring and fittings of building.
IS 900:2019	Code of practice for installation and maintenance of induction motor.
IS 1248 (Latest Revision)	Direct acting electrical indicating instruments.
IS 1554:1988 (Part - I).	PVC insulated (heavy duty) electric cables for working voltage up to and including 1100 volts.
IS 14846:2000	Sluice valve for water works purposes (50 to 300 mm. size).
IS 13095:2020	Butterfly valves.
IS 2190:2010	Selection of Fire Extinguisher
IS 694 - 1990	PVC insulated wires / cables for working voltage up to and including 1100V.

TECHNICAL SPECIFICATIONS FOR FIREFIGHTING WORKS

1. SCOPE OF WORK:

Work under this section shall consist of furnishing all labour, materials, equipment and appliances necessary and required to completely install electrically operated and diesel driven fire pumps, wet riser, fire hydrant system/fire extinguishing as required by the drawings and specified hereinafter or given in the Bill of Quantities.

Without restricting to the generality of the foregoing, the work shall include but not limited to the following:-

Fire Pumps, Motor, Engine and Accessories:

- a) Fire Fighting shall be connected from proposed plant room.
- b) Pressure gauge with isolation valves.
- c) Mild Steel / Galvanized Pipes, fittings, valves, suction strainers, suction & delivery headers & accessories.

Fire Hydrant System:

- a) M.S. / G.I. Piping for wet riser/hydrant systems.
- b) Fire Hydrant valves, RRL hose pipes, hose reels, hose cabinets, and connections to fire mains.
- c) Isolation & non-return valves, pipe supports/Fire Brigade inlet, and accessories.

Fire Sprinkler System

- a) M.S. / G.I. Piping for sprinkler systems.
- b) Fire Alarm control valves/Installation Control.
- c) Sprinkler heads, Spare Sprinkler.
- d) Inspection & Testing assemblies.

Hand Appliances / Fire Extinguishers :

Supply and installation of fully charged and tested fire extinguishers hand appliances Clean Agent type, water CO₂, foam, dry chemical powder type, ABC stored pressure type, CO₂ gas cartridge type as required by these specification and drawings.

Hydraulic Calculations :

The tenderer shall be responsible for providing fully detailed hydraulic calculations of sprinkler and hydrant system to comply with IS 15105 : 2021 and NBC-2016 to the requirements of Fire Services.

2. HYDRANT SYSTEM DESCRIPTION:

- a) The Hydrants System shall from proposed plant room .
- b) The Hydrant system shall be kept pressurized all the times.
- c) In the event of fire when any of the hydrant valves in the network is opened, the resultant fall in the pressure shall start the jockey pump first through pressure switch automatically. In case jockey pump fails to maintain the pressure common hydrant pump shall start at the preset pressure. In case of further drop in pressure the diesel standby pump shall start.

- d) The hydrant risers shall be terminated with air release valve at the highest points to release the trapped air in the pipe work.
- e) To provide for an air cushion for counteracting pressure surges / water hammer, an air vessel shall be furnished in the pump room near the fire pumps. The air vessel shall normally be kept partly full of water.
- f) External fire hydrant will be provided on the ring main. Hydrant shall be located at least 2M away from the building.
- g) Hydrant stations and cabinet shall be provided at all designated location inside and along with external hydrants. The hydrant stations shall be located in M.S steel fire cabinet as per drawing and will contain all items described in BOQ.

3. SPRINKLER SYSTEM DESCRIPTION:

- a) The automatic sprinkler system will be installed to protect the entire building with permitted exception e.g. electrical switch room, power transformer and DG room as identified. Sprinkler system shall be feed from proposed plant room.
- b) Installation control valve shall be provided for alarming in case of fire. Installation control valve comprising of main stop valve, alarm valve with accessories, strainer and water motor gong.
- c) For the sprinkler system the building shall have a riser of 150 mm dia, tapped on each floor to feed the sprinkler system. On each floor, at the tapping from the sprinkler riser, there shall be butterfly valve of suitable diameter and flow switch or Zone control valve with test drain assembly. The Zone control valve/flow switch shall be connected to the Annunciation Panel through electrical cables.

4. Jointing

Grooved Joints:

- a) Remove all loose dirt scale & grease from the pipe surface.
- b) Wrap the tape around the pipe, make sure the take is not twist & make the groove by machine as per the requirement of coupling manufacturer.
- c) Joints between the pipes and grooved fitting shall be made with the pipe by making square groove by grooving machine without reducing the thickness of pipe wall and fixed with the help of grooved coupling, nut, bolts & gasket etc.
- d) Grooving shall be done using OEM approved Grooving machine and verified by the Grooved fitting manufacturer.
- e) Grooved Mechanical Couplings for Joining Carbon Steel Pipe .
- f) Grooved Mechanical Couplings: Manufactured in two segments of cast ductile iron, conforming to ASTM A-536, Grade 65-45-12. Gaskets shall be pressure-responsive synthetic rubber, grade to suit the intended service, conforming to ASTM D-2000. (Gaskets used for potable water applications shall be UL classified in accordance with ANSI/NSF-61 for potable water service.) Mechanical Coupling bolts shall be zinc plated (ASTM B-633) heat treated carbon steel track head conforming to ASTM A-449 and ASTM A-183, minimum tensile strength 110,000 psi (758450 kPa) as provided standard.
 - Rigid Type: Coupling housings with offsetting, angle-pattern bolt pads shall be used to provide system rigidity and support and hanging in accordance with ANSI B31.1, B31.9, and NFPA 13. No torque shall be required while tightening nuts and bolts. Coupling shall be read to install type without disassembling whole coupling.

- Flexible Type: Use in locations where vibration attenuation and stress relief are required. Flexible couplings may be used in lieu of flexible connectors at equipment connections. Three Couplings shall be placed in close proximity to the vibration source.
 - Coupling shall be UL , FM , LPCB and VDs approved .
 - Coupling shall be fire rated for 760-800 deg for 15 mins. Coupling shall have a minimum life expectancy of 20 years .
- g) Flange Adapters: For use with grooved end pipe and fittings, for mating to ANSI Class 125 / 150 flanges.
- h) Grooved couplings shall meet the requirements of ASTM F-1476.
- i) Gasket: Synthetic rubber, wide width, conforming to steel pipe outside diameter and coupling housing, manufactured of elastomers as designated in ASTM D-2000.

Grooved End Fittings

Fittings shall be cast of ductile iron conforming to ASTM A-536, Grade 65-45-12, with grooved ends for direct connection into grooved piping systems with steel forged steel conforming to ASTM A-234, Grade WPB 0.375" wall (9,53 mm wall), or fabricated from Std. Wt. Carbon Steel pipe conforming to ASTM A-53, Type F, E or S, Grade B. Fittings provided with an alkyd enamel finish or hot dip galvanized to ASTM A-153 . Zinc electroplated fittings and couplings conform to ASTM B633.

Grooved Hole-Cut Branch Outlets:

- Bolted Branch Outlet: Branch reductions on 2 1/2"(DN65) through 6"(DN150) header piping. Bolted branch outlets shall be manufactured from ductile iron conforming to ASTM A-536, Grade 65-45-12, with fire lock type synthetic rubber gasket, and heat treated carbon steel zinc plated bolts and nuts conforming to physical properties of ASTM A-183.

The lubricant for fixing the Gasket on the pipe should be oil-free by manufacturer and capable to give the characteristic as required.

Following are tentative Quantity of Grooved Fittings :-

Flanged joints (65 mm dia and above)

Flanged joints with flanges conforming to IS: 6392 shall be provided on

- Straight runs at intervals not exceeding 25-30m on pipe lines of 50 mm dia and above and as directed by the Project Manager.
- For jointing all types of valves, appurtenances, pumps, connections with other type of pipes, to water tanks and other places necessary and as required for good engineering practice and as shown/noted on the drawings.
- Flanges shall be with GI bolts and nuts and 3mm insertion gasket of natural rubber conforming to IS: 11149.
- Shall be applicable where Grooved flange or Grooved coupling cannot be installed .

Unions (up to 50 mm dia)

Approved type of dismountable unions shall be provided on pipe lines of 40 mm dia and smaller dia, in locations similar to those specified for flanges.

5. Hose Reel:

- a) Wall mounting the swinging type first aid hose reel with drum shall conform to IS : 884-1985.
- b) The rubber tubing shall be 20 mm dia thermoplastic hose 30.0 m long as per IS : 12585 with SS / Gum Metal shut off nozzle having 6.5 mm dia orifice and control valve, shut off valve of approved make. The wall mounted bracket shall be fixed by means of fasteners. The hose reel shall have a stainless steel nozzle.
- c) The hose reel shall be connected directly to the riser by means of 25 mm dia MS / G.I. pipe with threaded bends, union & one no. ball valve.
- d) The drum can swing up to 170 degree.

6. Hose Cabinets:

- a) Hose cabinet shall be fabricated from 16 gauge MS powder coated sheet of fully welded construction with hinged single / double door partially glazed door with suitable locking arrangement, stove enameled fire red paint with 'Fire Hose' written on it prominently. Glass panels shall be 4 mm thick.
- b) The hydrant cabinet shall hold double headed hydrant, 2 nos. Hoses and 1 no. branch pipe.
- c) The cabinet shall have two pipe studs of 200 mm dia in MS with base which shall be fixed to the back of the cabinet and shall be used to hold the RRL hose.

7. RRL Hoses :

- a) The hoses for the internal and external hydrant system should be rubber impregnated woven jacketed type conforming to IS:636 Type - A. Each fire hose shall be provided with quick coupling, branch pipes, nozzles, spanners etc.
- b) Hose pipes of all types shall be capable of withstanding an internal water pressure of not less than 3.5 Kg/Sq.cm without bursting. It must also withstand a pressure of 21 Kg/Sq.cm without undue leakage or sweating.
- c) Each hose shall be fitted with instantaneous spring lock type couplings at both ends. Hose shall be fixed to the coupling ends by copper rivets and the joint shall be reinforced by 1.5 mm galvanized mild steel wires and leather bands.

8. Branch Pipes and Nozzle :

Gun Metal / Stainless steel Standard Branch Pipe shall be used conforming to IS : 903 with Stainless steel nozzle of 16mm dia to fit standard instantaneous type 63mm dia hose coupling. Suitable spanners of approved design shall be provided in adequate numbers for easy assembly and dismantling of various components like branch pipes, nozzles, quick coupling ends.

9. Hydrant Valve :

Gun Metal / Stainless steel Hydrant valve shall be of oblique pattern provided as per IS: 5290 complete with hand wheel, quick coupling connection, spring and blank cap and chain.

The hydrant shall have flanged inlet of 100 mm dia and 63 mm female instantaneous type outlet. The hydrant shall have a rubber plug with chain fixed to the main body of the Hydrant.

10. Pressure Switch:

The pressure switches shall be employed for starting and shutting down operation of pumps automatically, dictated by lines pressure. The Pressure switch shall be diaphragm type, it shall be suitable for line pressures upto 15 kg / cm².

The switch shall be suitable for consistent and repeated operations without change in values.

The enclosure shall be of aluminum and pressure element and wetted parts shall be of stainless steel. The switch shall be snap acting type with 1 no. NO / NC contact.

11. Air Vessel:

Provide an air vessel for counter acting pressure surges whenever the pumping set comes into operation. It shall be normally partly full of water, the remaining being filled with air, which will be under compression when the system is in normal operation.

Air vessel shall be fabricated from MS plate conforming to IS : 2002 grade 2A having 10 mm thickness shell with 10 mm thick dished ends and suitable supporting legs. It shall be provided with a 80 mm dia / 100 mm dia flanged connections from pump, one 25 mm drain with ball valve and 15 mm sockets for pressure gauge and pressure switches. The air vessel shall be hydraulically tested to 20 kg/cm² pressure for 30 minutes.

The pressure vessel shall be provided for hydrant and sprinkler system. The pressure switches shall be mounted on the drain end of each air vessel. The air vessel shall also be provided with safety valve mounted at the top.

12. Valves:

a) Sluice Valves:

Sluice valve of 50 NB and above shall be flanged/grooved end valve with Ductile iron body. The spindle, wall seat, and wedge nuts shall be of bronze / ductile iron. They shall generally have rising stem and shall be of the particular duty and design called for. All sluice valves will be provided with a supervisory switch.

The valves shall be supplied with suitable flanges, non-corrosive bolts and asbestos fiber gasket. Sluice valves shall conform to Indian Standard IS: 14846: 2000 and IS: 2906. Sluice valves for water works purposes suitable for seat test pressure of 16 Kg/Sq.cm.

b) Butterfly Valve :

The butterfly valve shall be suitable for water works and tested to a minimum of 20 Kg / Sq.cm pressure.

UL / FM Global approved, 285 psi (1965 kPa), grooved ends, polyphenylene sulfide (PPS) coated ductile iron body (ASTM A-536, Grade 65-45-12). Ductile iron disc, synthetic rubber encapsulated suited for the intended service, with integrally cast stem. Complete with weatherproof actuator and pre-wired supervisory switches.

The valves shall be supplied with manual gear operated opening/closing by lever.

The valves shall be supplied with supervisory switch.

c) Gun Metal Valves:

Gun metal valves shall be used for smaller dia pipes, and for threaded connection. The valves shall bear certification as per IS: 778-1984 and shall be rated to 16 Kg/Sq.cm pressure.

The body and bonnet shall be of gun metal to IS : 318. The steam gland and gland nut shall be forged brass to IS: 319. The hand wheel shall be of cast iron to IS: 210.

The hand wheel shall be of high quality finish to avoid hand abrasions. Movement shall also be easy. The spindle shall non rising type.

All valves shall be approved by the Authority Representative before they are allowed to be used on the work.

d) Non-Return Valve :

Non-return valves shall be ductile iron grooved end type. An arrow mark in the direction of flow shall be marked on the body of the valve. Black enamel coated ductile iron body, ASTM A-536, Grade 65-45-12, elastomer encapsulated ductile iron disc suitable for intended service, stainless steel spring and shaft, welded-in nickel seat, 250 psi (1725 kPa).

e) Air Valves :

Provide 25 mm dia screwed inlet cast iron single acting air valves, on all high points in the system as shown on the drawing.

f) Drain Valve :

Provide 50 mm dia between steel pipe to IS : 1239 (heavy class) with 50 mm gunmetal full way valve for draining any water in the system in low pockets. Drain valves shall be provided at low points of all water riser and mains to ensure that all sections of pipe works and plant can be drained.

g) Pressure Relief Valves

Each pressure relief valve shall be of the fully enclosed type and fitted with hand easing gear. Each pressure relief valve in a pressure reducing station shall have a flow capacity equal to that of the pressure reducing valve. Pressure relief valves in locations other than reducing stations shall have flow capacities equal to that of the associated equipment.

13. Pressure Gauge:

Pressure gauge shall be provided near all connections to hydrant system and isolation valves of sprinkler system and where required. Pressure gauge shall be stainless steel 100 mm dia gunmetal Bourden type with a scale range from 0 to 15 Kg/cm² and shall be constructed as per IS 3624. Each pressure gauge shall have a siphon tube connection with ball valve, tapping and connecting pipe and nipple. The gauge shall be installed at appropriate level and height for easy readability

14. Branch Pipe:

Gun Metal Standard Branch Pipe shall be used conforming to IS : 903 with gun metal nozzle of 16mm dia to fit standard instantaneous type 63mm dia hose coupling.

15. Pendent / Upright Type Sprinkler Head:

Sprinkler heads shall be of quartzoid bulb type with bulb, valve assembly, yoke and deflector. The sprinkler shall be of approved make and type with 15 mm nominal dia outlets. The bulb shall be made corrosion-free material strong enough to withstand any water pressure likely to occur in the system. The bulb shall shatter when the temperature of the surrounding air reaches at 68. The nominal bore shall be 15 mm dia and color of liquid shall be Red. The Sprinkler head shall bear approval of FOC/UL/FM.

All Sprinkler shall be quick response type.

16. Installation Control Valve For Sprinkler:

Black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, EPDM seal, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Water working pressure is 300 psi. Suitable for constant and variable pressure systems with optional Series 752 retard chamber. 9.21.2 It shall be vertically mounted and the direction of water travel shall be indicated on the surface. It shall be rated to 12 kg/cm² and tested to 25 kg/cm² pressure.

A by-pass check valve shall be fitted to adjust minor and slow variations in water pressure for balancing so as to avoid any false alarm.

The valve shall also be provided with a test control box. The box shall house a lever to test and operate the ICV. A brass strainer shall also be provided at the point of water supply to the alarm gong. A retarding chamber shall also be provided. The chamber shall be able to balance the water pressure in case of water line surges.

Each installation control valve shall have two sets of pressure gauges with brass ball valve type shut off.

A water motor Alarm shall also be provided. This shall be mechanically operated by discharge of water through an impeller. The drive bearing shall be weather resistant. A strainer shall be provided on line before the nozzle. A brass automatic ball drop valve with the retard chamber shall also be provided.

17. Flow Switch:

Flow switch shall have a paddle made of flexible material of the width to fit within the pipe bore. The terminal box shall be mounted over the paddle/pipe through a connecting socket. The switch shall be potential free in either N O or N C operation of a single sprinkler head. The terminal box shall have connections for wiring to the Annunciation panel. The seat shall be of stainless steel. The flow switch shall have IP : 55 Protection. It should operate even with the flow of one Sprinkler bursting.

18. Zone Control Riser Module

Zone control valve with drain assembly shall be of commercial class of grooved or flanged type including the module body integrated with a shut off valve, test and drain valve combination with different orifice sizes, a UL listed and FM approved flow switch, and a pressure gauge of horizontal and vertical type. The terminal box shall be mounted over the paddle/pipe through a connecting socket. The switch shall be potential free in either NO or NC operation of a single sprinkler head. The terminal box shall have connections for wiring to the Annunciation panel. The seat shall be of stainless steel. The flow switch shall have IP:55 Protection. It should operate even with the flow of one Sprinkler bursting. Unit shall be UL/FM approved.

19. Braided Flexible Hose for Sprinkler:

UL/FM , VDS app The drop system must be with ANNULAR CORRUGATION, which also allows the flex drop to be bended just after the end fittings. The drop system shall consist of a BRAIDED type 304 stainless steel flexible tube, zinc plated steel Male threaded nipple for connection to branch-line piping, and a zinc plated steel reducer with a female thread for connection to the sprinkler head and with a numbering on the reducer to ease the process for vertical positioning of the sprinklers.

The drop shall be UL/ FM & VDS approved & minimum number of 90 Degrees bends allowed should be 3 for 1.2m and above & Minimum Bend Radius should be 178 mm as per FM & 76.2 mm as per VDS.

Union joints shall be provided for ease of installation.

Flexible drop should have max. Working pressure of: 200 PSI / 13.75 bar – FM Approval | 232 PSI / 16 bar – VDS Approval.

20. Deluge Valve :

Fire Deluge valve shall be Actuation, low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft,

peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. Valve shall be externally resettable. The required air pressure is 13 psi. Water pressure is 300 psi. The valve shall be available bare & pre-trimmed.

21. Fire Man's Axe :

Fire man's axe for firefighting purpose shall be used conforming to IS:926- 1985

22. Painting:

All hydrant pipes shall be finished with post office red colour paint. All M.S. pipes shall first be cleaned thoroughly before application of primer coat. After application of 2 coats of Red oxide primer, two coats of enamel paint shall be applied. Wherever required all pipe headers shall be worded indicating the direction of the pipe and its purpose such as " TO RISER NO 1" etc.

23. Testing :

All piping in the system shall be tested to hydrostatic pressure of 13.5 Kg/Sq.cm without drop in pressure for at least 2 hours.

Rectify all leakages, make adjustments and retest as required and directed.

24. Fire extinguishers:

Scope

Work under this section shall consist of furnishing all labour, materials, appliances and equipment necessary and required to install fire extinguishing hand appliances as per relevant specification of various authorities.

Without restricting to the generality of the foregoing, the work shall consist of the following:

Installation of fully charged and tested fire extinguishing hand appliances of A B C powder type as required and specified in the drawings and schedule . The Fire extinguishers as per the IS 2190 /NFPA 10

General Requirements

Hand appliances shall be installed in easily accessible locations with the brackets fixed to the wall by suitable anchor fasteners.

Each appliance shall be provided with an inspection card indicating the date of inspection, testing, change of charge and other relevant data.

All appliances shall be fixed in a true workmanlike manner truly vertical and at correct locations.

Measurement

Fire extinguishers shall be counted in numbers and include installation of all necessary items required as given in the specifications.

Portable Fire Appliances Requirement, Type and Location as per IS 2190 / NFPA 10 along with Fire authorities.

Portable Fire appliances as mentioned below :-

- CO2 Gas Fire extinguisher
- ABC Type fire Extinguisher

Hand appliances shall be installed in readily accessible locations with the appliance brackets fixed to wall by suitable anchor fasteners or by means of floor mounted supports.

Each appliance shall be provided with an inspection card indicating the date of inspection, testing, change of charge and other relevant data.

All appliances shall be fixed in a true workman like manner truly vertical and at correct locations. Identical type of extinguishers shall be of same make and shall have similar method of operation.

a) ABC Type Fire Extinguishers :

Code	:	BIS approved
Body	:	Material–MS sheet, MIG Weld Minimum Thickness-2mm
Valve	:	Brass Forging – IS : 6912 Threads conf : IS : 2643 Handle – MS, Epoxy coated upper & lower level for squeezing.
Pressure Gauge	:	Brass Shell, Nickel plated, water proof
O' Ring Washer	:	Rubber IS : 5382
Spindle	:	Brass – IS : 319
Spring	:	Carbon Steel-IS : 4454
Siphon Tube	:	Outer dia (nominal) – 16 mm Inner dia (nominal) – 12 mm Length – (nominal) – 350 mm
Discharge Hose	:	Braided Rubber Length (nominal) – 500 mm Internal Dia (nominal) – 10 mm Bursting Pressure – 50 Kg/cm ²
Charge	:	Mono ammonium phosphate base dry Chemical powder (IS 14609) Weight – 5 Kg ± 2% Propellant gas – Nitrogen Working Pressure – 15 Kg/cm ²
Performance	:	Discharge – Duration – 15-20 Seconds Jet throw – minimum 4 mtrs Minimum %age discharge – 85%

b) Carbon-Di-Oxide

Code	:	BIS approved
Body	:	Material–Manganese, seamless tube conforming IS : 7285 Overall length (nominal) – 620 mm Outer Dia (Nominal) – 140 mm Wall Thickness (Nominal) – 4.5 mm Base Thickness – 12-16 mm Mass Empty (Nominal) – 11.3 Kg Full Weight – 18.4 Kg
Testing Pressure	:	250 Kg/cm ²
Working Pressure	:	150 Kg.cm ² at 15°C
Neck Ring	:	Threads – As per IS : 3224 Type – Wheel Type
Valve	:	As per IS : 3224 : 2002 Working pressure – 158 Kg/cm ²
Hose	:	Internal dia – 10 mm Length – 1 mtr Working Pressure – 140 Kg/cm ² Bursting Pressure – 275 Kg/cm ²
Discharge Tube	:	MS, Swivel joint type with rubber

Discharge Horn	:	cover Rotation – 360° Property – Non Conductive Material – Fiber Glass/Polythene Length – 250 mm Internal dia at discharge – 62 mm
Charge	:	Carbon Dioxide confirms IS : 15222 Filling Ratio – 0.667 Outer dia – 19 mm Inner dia – 9 mm Thickness – 3 mm
Painting	:	Fire Red
Maintenance	:	As per IS : 2190
Siphon Tube	:	Brass – IS : 407
Performance	:	Discharge Duration – 10 – 18 Seconds Minimum %age of discharge-95.

25. Panel Flooding System

General

The scope covers Supply, Installation, Testing and Commissioning of Automatic Clean Agent FK 5-1-12 (Fluor ketone UL Listed) based Local Flooding System complete for electrical panels with flexible fire detection tubing, cylinder, valves, integration with Main Fire Alarm Control Panel for status monitoring etc. The scope of work includes, but not limited to the following,

- Providing Direct Panel Gas Flooding System with flexible Linear Pneumatic Heat/fire detection/ discharge tubing inside the panels.
- Clean agent storage cylinder for flooding gas inside the panels.
- Any other item required to the successful commissioning of the system.

The electrical panel fire suppression system shall be complete with UL Listed Clean Agent storage cylinders for required capacities, extinguishing agent as specified, fire detection tubing, filling and end-of-line adaptors, pressure switches, control equipment, Clean Agent Cylinder/Valve Assembly, Cylinder Mounting Bracket and all necessary accessories to protect the Electrical panel in case of fire. The system will have an interface with Main Fire Alarm and Control Panel. In case of fire in the concerned Panel, indication of Fire / discharge status should come in Main Fire Alarm and Control Panel.

Design Requirements

All the detecting devices, alarm, indicating devices, containers and other related equipment shall have required approvals & Authorization.

- All installations shall conform to NFPA 2001 requirements.
- Clean Agent should be :
 - The Clean Agent should have Zero Ozone Depletion Potential. (ODP = 0)
 - The Clean Agent should not have Global Warming Potential of more than 1.
The Clean Agent should be a low pressure agent and atmospheric life time of 5 days
- System Equipment

Linear Pneumatic Tube shall be UL Listed.

The tubing shall be installed throughout the Electrical Panel with one end connected to the top of the Clean Agent container valve. The tubing shall be pressurized with Dry Nitrogen to 13.5 Bar and maintains the

system in the "OFF" position. The tube shall burst at the hottest point at temperatures between 100-120 degree C. The tubing shall perform three functions:

- Heat Detection,
- System Activation and
- Clean Agent discharge.

Pressure Switch (UL Listed) UL Listed Pressure Switch to Monitor Pressure Drop in the Tube, Switch Point 5 Bars.

Clean Agent Container (UL Listed)

Cylinder shall be UL Listed and Seamless, made of Aluminum Alloy. Each storage container shall be equipped with a nickel-plated brass valve, a pressure gauge to monitor container pressure, and a quarter-turn ball valve that interfaces with the detection tubing. The quarter-turn ball valve shall be kept closed at all times when the container is not in service.

Technical and Installation Requirements

Provide sufficient amount of Extinguishing Agent to Inert the Micro environment being protected considering the following when computing volume to verify suitability and to establish design limitations:

- Volume of hazard area.
- Specific volume of Clean Agent.

- Specifications for Electrical and Mechanical Works
- Discharge time and flow rates.
- Design concentration and design factors.
- Detector/discharge tubing placement.
- Placement of the cylinder

System should have provision to Interface system with main control fire alarm system and BMS.

All doors and holes in the enclosed/equipment should be closed or sealed to maintain the tightness of enclosure.

Each clean agent pre-engineered automatic system is equipped with its own detection/discharge tubing.

The unit shall be a self-contained and shall be equipped with its own non-electric automatic detection system to detect the fire and agent release system into the Electric panel to suppress the fire.

The Clean Agent is stored in UL Listed Cylinders as compressed liquid, super-pressurized with Dry Nitrogen to 13.5 Bar. The ambient operating temperature range for all system components should be 0 degree C to 54 degree C.

Each UL Listed container is equipped with a nickel-plated brass valve, a pressure gauge to monitor container pressure, and a quarter-turn ball valve that interfaces with the Detection Tubing.

Provide wall-mounted painted steel bracket to mount the container/valve assembly in a vertical (upright) position. Each bracket should be equipped with integral quick-clamp straps.

Install equipment as indicated on the approved shop drawings, and in accordance with requirements of NFPA-2001.

Make final connections between equipment and system detection tubing under direct supervision of factory trained and certified representative of manufacturer.

It shall be so designed that it does not affect the IP ratings of electrical panels. The Sub-Contractor has to coordinate with manufacturer of electrical panels for provision of holes to run the tube and brackets for mounting the tube. The entry of tube inside the panel shall be through suitable size of connector.

The tubing shall be manufactured from specially processed polymer material to achieve the desired heat detection and delivery characteristics.

The tubing shall be capable of working even when contaminated with oil, dust and debris as long as the contamination will allow the heat to pass through the tube.

26. Room Flooding Suppression System

The bidder shall supply, install, test and put in operation 3MTM NOVEC-1230 TM based fire suppression system. The fire suppression system shall include and not be limited to gas release control panel, CCOE approved seamless cylinders, nozzles, discharge valve (with solenoid or pneumatic actuator), discharge pipe, non-return valve and all other accessories required to provide a complete operational system meeting applicable requirements of latest NFPA 2001 standards and installed in compliance with all applicable requirements of the local codes and standards.

The work under this system shall consist of design, supply, installation, testing, training & handing over of all materials, equipment, hardware, software appliances and necessary labour to commission the said system, complete with all the required components strictly as per the enclosed tender specifications, design details. The scope also include the supply, installation & commissioning of any material or equipment including civil works that are not specifically mentioned in the specifications and design details but are required for successful commissioning of the project.

The system design should be based on the specifications contained herein, NFPA 2001 and in accordance with the requirements specified in the design manual of the agent. The bidder shall confirm compliance to the above along with their bid.

The system shall be properly filled and supplied by an authorized OEM (Original Equipment Manufacturer).

Key Component of the system along with calculation software of the system shall be approved by UL/FM/Vds.

Generally the key components of the (NOVEC) 1230 system shall Comply with NFPA 2001 standards and Have the approval from US EPA (Environmental Protection Agency) for use as a total flooding fire extinguishing for the protection of occupied space:

- Must have zero ozone depletion potential (ODP)
- Be efficient, effective and does not require excessive space and high pressure for storage;
- Be commercially available
- Contain the required key components such as valves and its accessories, actuators, flexible discharge and connection hoses, check valves, pressure switch, and nozzles

DESIGN AND ENGINEERING

The system shall be designed taking the minimum design concentration as per NFPA 2001(Latest Edition) guidelines & as applicable to class 'A' & C risks. The NOVEC 1230 agent shall be stored in seamless steel cylinders and dry nitrogen shall be added to provide additional energy to give the required rapid discharge. At the normal operating pressure of 50bar at 21Deg C, the agent is a liquid in the container.

The system design must consider the limitations caused by the void height. The vendor should clearly indicate the quantity of the gas in Kgs. to be used for the system. All voids within each hazard shall be discharged simultaneously. Each hazard shall have an independent system, unless otherwise specifically stated.

The system shall have a working pressure of 50bar. A fill density between 0.40 Kg/lit. To 0.85 Kg/Lit or as recommended by the manufacturer should be considered for the agent to be discharged within the specified time of 10 seconds.

The system engineering company should carry out the piping Isometric design and validate the same with a hydraulic flow calculation generated by using the agent's design software. The appropriate fill density to be arrived based on the same.

The design & calculation shall be checked & certified by manufacturer/Consultant. You may note that the calculation is the only guarantee that the system will work, provided the system is installed exactly as per the design. The contractor has to take into consideration the routing available while designing the pipe network.

The Vendor shall enclose their design sheet along with the offer & the offer/BOQ should be in line with their design. The dimensions of rooms to be protected are given in the BOQ. The vendor shall also consider the following

- The vendor shall consider simultaneous total flooding of all voids within the protected volume. The system shall be designed in accordance with the OEM's Design Manual.
- In order to extinguish a fire using clean agent, the concentration of agent delivered to each void shall be above the minimum design concentration. The following shall be considered while designing the system. The minimum design concentration shall be 4.2 for class A&C fire risks.
- If the protected volume has a floor and / or ceiling void the spaces shall be included in the protected volume, employing a minimum design concentration not below that of the main room compartment.
- The discharge nozzles shall be located within the protected volume in compliance to limitations and with regard to spacing, floor and ceiling coverage, etc.
- The nozzles shall be positioned such that they would cover the entire area up to the extreme corners of the area under protection and the design concentration will be established in all parts of the protected volumes and it shall be ensured that the nozzles are NOT placed directly above the racks
- The final numbers of discharge nozzles shall be according to the OEM's product manual.
- The gas flow calculations shall be carried out on special software given by the OEM. The software should support usage of seamless cylinders which have a different design compared to the standard containers used worldwide.
- The system acceptance report shall show the resulting concentration in each independent void to be above 4.2% and the average pressure at each nozzle to be not less than 6.4 Bar.
- The agent discharge time shall not exceed 10 seconds.
- The design concentration shall follow at minimum NFPA 2001 for under floor, room and ceiling space. Unless otherwise approved, room temperature for air-conditioned space shall be taken around 20 - 23 Deg C. For non-air conditioned space, the temperature shall be taken around ambient temperature. The system shall be designed with minimum design concentration of 4.2% as applicable to Class A& C fire.
- The system engineering company should carry out the piping Isometric design and validate the same with a hydraulic flow calculation generated by using the agent's design software. Appropriate fill density to be arrived at based on the same.

REFILLING AND MAINTENANCE

In case of any leakage or accidental discharge of the agent, it should be possible to refill the cylinders in India itself in the CCOE approved filling station. The contractor should indicate the source of refilling and time that will be taken for refilling and replacement.

DISCHARGE TIME

As gas has to be fully discharged within 10 seconds for effective quenching of fire as per the relevant standards, the contractor has to ensure that the design meets this requirement. Once the discharge takes place there should be warning signs restricting personal from entering the protected area until the gas has been cleared from the area.

MATERIALS AND EQUIPMENTS

All materials and equipment's shall be from approved manufacturers and shall be suitable for the performance of their respective functions. The cylinders should be complete with all accessories. The contractor shall indicate the dimensions of the cylinders required for each area while quoting.

CYLINDER

The cylinder shall be high pressure, seamless steel gas cylinder, flat type, concave bottom as per IS 7285 complete with neck ring. Welded and non-CCE approved cylinders will not be accepted.

Each cylinder shall be seamless steel type manufactured from billets and tested in accordance with IS 7285

As per the regulations of the Chief Controller of Explosives (CCE) Nagpur, any system which has a working pressure above 19 bar (280 psi) will require the use of seamless cylinders that have been duly approved by the CCE, Nagpur.

The maximum fill density of NOVEC 1230 in a cylinder shall not exceed 0.85 Kg/Lit. of internal volume. Appropriate fill density shall be chosen based on the cylinder location and piping. The hydraulic calculations should prove that the fill density is appropriate and total discharge will take place within 10 seconds.

The cylinders shall be super-pressurized with dry nitrogen to 50 bar at 21°C. The cylinder shall be capable of withstanding any temperature between -30° C and 70°C. Cylinder shall be mounted according to manufacturer recommendations. The cylinder shall withstand Hydrostatic test pressure up to 250 bars and maximum working pressure at 15°C shall be 150 bars

The cylinder/valve assembly shall have suitable metallic protection for the valve enabling transportation of the filled cylinders safely.

All cylinders shall be distinctly and permanently marked with the quantity of agent contained, the empty cylinder weight, the pressurization pressure and the zones they are protecting.

CYLINDER VALVE

Each cylinder shall be provided with a valve of suitable size. Each cylinder valve shall have a provision for fixing a supervisory pressure switch and a safety burst disc to protect the cylinder from over pressure. The cylinder valve shall necessarily have a disabling plug (locking pin) to prevent accidental discharge of the valve during transportation and installation. The Valve assembly shall be mounted directly on the cylinder.

The Pressure Gauge must have in-built low supervisory switch and low pressure supervisory switch must not be connected externally on the valve. The Cylinder Valve must have a provision of mounting the Electrical Actuator and the Pressure gauge on either any two sides of the Valve; it should not be limited to only one side.

Each valve is to be fitted with a pressure gauge for monitoring loss of pressure.

The master cylinder valve is to be released electrically which is performed by means of a solenoid valve arrangement. Pilot cylinder actuation and pyrotechnic devices shall not be used.

CYLINDER VALVE ACTUATORS

In a single cylinder system the cylinder shall have a solenoid operated actuator and a manual actuator incorporating a strike knob mounted on top of the solenoid operated actuator. Multi cylinder systems shall have the same fitted on to the master cylinder and pressure operated actuators fitted on each slave cylinder. All actuators shall be original OEM make and locally manufactured actuators shall not be used.

HOSES

Each cylinder valve shall be provided with a plug in type flexible rubber discharge hose of minimum 40mm size and shall withstand a test pressure as at least 150 -200% of the cylinder stored pressure. Each hose shall be

permanently marked with the test pressure and OEM's part number. Multi cylinder systems shall have an interconnect hose for each cylinder. The interconnect hose shall have a length not less than 700 mm and shall be labelled with the test pressure of 100 Bar and the OEM's part number. All hoses shall be original OEM make and locally manufactured hoses shall not be used.

MANIFOLD WITH CHECK VALVE

The manifold shall be fabricated from ASTM A106 Schedule 40/80 seamless pipe and shall have integral check valves provided for each cylinder.

OTHER ACCESSORIES

Electric Control Head, Pressure operated control head, Master Cylinder Adapter Kit, Flexible discharge hose, discharge Nozzles, and other required accessories shall be approved or listed for use with NOVEC 1230. All the gaskets, O-ring, sealant and other components shall be constructed of materials compatible with the clean agent. The system should be engineered using hardware & accessories approved by the Engineering System Distributors of NOVEC 1230 as mentioned in the list of approved makes. The Vendor shall submit the detailed data sheets & drawings of each accessories with the required part Nos. and also the common system data sheet containing these parts with part Nos.

PIPES & FITTINGS

All Pipes shall be of ASTM - A-106, Gr: B, schedule - 40 seamless Mild Steel Pipes and fittings shall be as per ASTM-A-105 standard. Distribution piping and fittings shall be installed in accordance with the manufacturer's requirements, NFPA 2001, and approved piping standards and guidelines. All distribution piping shall be installed by qualified individuals using accepted practices and quality procedures. All piping shall be adequately supported and anchored at all directional changes and nozzle locations.

All piping shall be reamed, blown clear and swabbed with suitable solvents to remove burrs, mill varnish and cutting oils before assembly.

All pipe threads shall be sealed with Teflon tape pipe sealant applied to the male thread only.

DISCHARGE NOZZLE

Engineered discharge nozzles shall be provided within the manufacturer's guidelines to distribute the NOVEC 1230 agent throughout the protected spaces. Nozzle shall control the flow of NOVEC 1230 to ensure high velocity, proper mixing in the surrounding air and uniform distribution of the agent throughout the enclosure.

The number of nozzles and their positions must be chosen so that the design concentration is maintained everywhere in the enclosure. Nozzle shall be located where they can be adequately supported on walls, ceiling or structural members. Software generated calculation supporting the nozzle design shall be submitted by the successful bidder before signing of contract.

MANUAL MODE OPERATION

The manual release shall happen in three ways. Manual Release through the panel, Manual release station & Manual Release directly from the cylinder

The electric manual release (activated through the panel) shall be a dual action switch device which provides a means of manually discharging the suppression system from the panel

The manual release station shall also be a dual action device requiring two distinct operations to initiate a system actuation.

Manual actuation shall be capable of bypass the time delay or shall have the time delay depending upon the client requirements. It shall be possible to program both at site and abort functions and shall cause all release and shutdown devices to operate in the same manner as if the system had operated automatically.

Manual release station shall be located at each entry from the protected hazard and the abort station shall be located at the exit side

If the "Manual release lever on the master cylinder shall be activated by operating the lever, the gas shall get released immediately. Abort function cannot be performed after activating the manual release lever.

CONNECTION DETAILS

The Addressable detectors shall be connected in loops which are independently addressed from the fire alarm panel. Or Conventional detectors shall be used and the same shall be connected to the conventional fire detection cum gas release panel.

The manual abort station and manual release stations shall be connected to fire alarm cum gas release panel. In addition the gas release panel shall have the manual mode switch as explained above

The discharge pressure switch shall be connected to the gas release panel thro addressable monitor modules.

The sounder cum strobes shall be connected gas release panel.

The solenoid actuator shall be connected to gas release panel in the Gas release terminal.

The fire trip input for the PAC units are looped and connected to through addressable control modules to the fire alarm cum gas release panel.

The Access controlled door release shall be connected to the fire alarm cum gas release panel thro addressable control modules.

The monitor module shall be connected from the Building fire alarm panel to the gas release panel for alarm communication fault status of the gas release panel.

CONVENTIONAL MULTI SENSOR DETECTOR

It shall be Multi Sensor type Smoke Detector with UL/FM and FM Approval. It should have Green LED Indication for Normal Operation, RED for Fire condition and Yellow for Fault. Detector should have 3600 LED Indication.

MANUAL RELEASE UNITS / STATIONS

Manual release units - double action type shall be provided at each exit of the protected area and as indicated on the drawings. Manual release unit casings shall be colored YELLOW and shall be inscribed with the lettering "AGENT (NAME) MANUAL RELEASE POINT". Mounting heights for manual release units shall be agreed on site.

ABORT UNITS / STATIONS

Abort switches, where provided, shall be located within the protected area and shall be located near the means of egress for the area. The abort switch shall be of a type that requires constant manual pressure to cause abort, In all cases the normal and manual emergency control shall override the abort function. The abort switch shall be clearly recognizable for the purpose intended.

The abort units shall be momentary devices requiring constant pressure to maintain contact closure and shall be coloured RED and shall be inscribed with the lettering "AGENT (NAME) ABORT POINT". Mounting heights for abort units shall be agreed on site.

REMOTE LAMP UNIT

Remote lamp units shall be provided to give indication of an activated smoke detector within a ceiling or floor void.

DOCUMENTATION

The successful contractor should prepare & submit the piping Isometric drawing and support the same with a hydraulic flow calculation generated by using the agent's design software. The calculations shall validate the fill density assumed by the bidder.

The bidder shall submit copies of the datasheets of the hardware used in the system.

The bidder shall also submit calculations to evidence the quantity of agent considered for the system.

The System Company should provide, as part of handing over, the as-built drawing, operation manual and maintenance manual. The as-built drawing shall exactly match the Isometric drawing submitted with the flow calculation prior to commencement of work.

The successful vendor must submit, along with the supply invoice, a certificate of authenticity, for the agent.

The design & the installation shall be certified by principal system supplier.

TESTING PROCEDURES FOR GAS BASED FIRE SUPPRESSION SYSTEM

GENERAL

Prior to placing the completed system in service, the installation should be inspected and tested by qualified personnel to confirm that the system has been properly installed and will function as specified below.

- Conformance to System design.
- Suitability of piping, its correctness to project design, and its supports.
- Operating Sequences.
- Suitable Hazard Environmental controls and Safety precautions and.
- Compliance with the norms of NFPA STD. 2001 (2008 Edition) and other applicable standard.

PIPING

- Verify that pipe sizes and layout are as indicated on the project working drawings.
- Verify the piping supports and ensure the pipes are secured and restrained from the movement.
- After the installation after system piping is completed, and prior to the connection of the cylinders, accessories, nozzles etc., the discharge piping should be blown out and then
- Pressure tested for leakage. Plug or Cap all pipe outlets and apply 40 psi (3 bar) pressure with air for 10 minutes. At the end of 10 minutes, the pressure loss shall not exceed 20% of the test pressure. Under no conditions should water be used in testing.

CYLINDERS

- Inspect cylinders and ensure bracketing and cylinders are secure.
- Check pressure gauge and ensure pressure is correct for temperature at cylinder location.
- Check cylinder discharge bends and check valves for proper orientation, connection and tightness.
- Ensure that the cylinder operating components and auxiliary control devices are installed in accordance with the project drawing.
- All the required labelling as done on the cylinders.

NOZZLES

- Ensure each nozzle has an orifice drilled to suit the specific location and discharge flow requirements.
- Verify that nozzle locations and orifice sizes are as indicated in the project drawing.

ELECTRICAL

- All testing of the extinguishing system electrical circuits, Interlocks, Fire detectors and other electrical devices like solenoid actuators shall be carried out in accordance with the systems control panel.
- The control panel should indicate normal supervisory condition.
- Check the smoke detectors are in cross zone.

ROOM INTEGRITY TEST

NFPA2001 states that the design concentration of a clean agent post discharge shall be maintained for a sufficient period of time to ensure there is no re-ignition of fire once suppressed. NFPA 2001 and 12A require an enclosure integrity test as part of the acceptance procedure for all clean agent systems. This includes

halocarbon and inert agents. This comprehensive test and calculation predicts the leakage area corresponding to the retention time of agent in the enclosure on discharge. Most specification state it must be ten minutes.

27. FIRE PUMPS

Overview

Work under this section shall consist of furnishing all labour, materials, equipment and appliances necessary and required to completely install electrically operated and diesel driven pumps and as required by drawings and specified here in after bill.

- Electrically operated pumps with motors and diesel engine driven pumps with diesel engine, common base plates, coupling, coupling guard and accessories as per UL Listed and FM Approved.
- Automatic starting system with all accessories, wiring and connections and pressure switches.
- Motor control center as per NFPA 20 and UL Listed and FM Approved.
- Annunciation system with all accessories wiring and connections.
- Pressure gauges with isolation valves and piping, bleed and block valves.
- Suction strainers and accessories.
- Vibration eliminator pads and foundation bolts.
- Leak-off drain shall be led to the nearest floor drain.

S. No.	Description	Proposed Pump Capacity & Head	Electrical Load (HP)
1.	Electrical-driven Hydrant Pump	2850 LPM @ 105 Mtrs	(100)
2.	Electrical driven Sprinkler Pump	2850 LPM @ 105 Mtrs	(100)
3.	Diesel driven (Standby for Hydrant & Sprinkler Pump)	2850 LPM @ 105 Mtrs	-
4.	Electrical driven Jockey Pump for Hydrant	180 LPM @ 105 Mtrs	7.5
5.	Electrical driven Jockey Pump for Sprinkler	180 LPM @ 105 Mtrs	7.5
6.	Electrical driven Curtain Nozzle Pump	1620 LPM @ 25 Mtrs	(40)
7.	Diesel driven Fire Pump Water Curtain Nozzle Pump	1620 LPM @ 25 Mtrs	-
	Total Load		15 (HP)

General Requirements

All fire pumps are factory assembled and tested and fire pump shall be painted with red paints.

Pumps shall be installed true to levels on suitable concrete foundations. Base plate shall be firmly fixed by properly grouted foundation bolts.

Pumps and motors shall be truly aligned by suitable instruments. Record of such alignment shall be furnished to the Project Manager.

All pump connections shall be standard flanged type with number of bolts as per relevant standard requirement for the working pressure. Companion flanges shall be provided with the pumps.

Manufacturers' instructions regarding installation, connections and commissioning shall be strictly followed.

Tenderer shall provide necessary test certificates, type test certificates, performance curves and NPSH curves of the pumps from the manufacturer when called for.

The tenderer shall provide facilities to the Project Manager and Consultant for inspection of equipment during manufacturing and also to witness various tests at the manufacturer's works without any cost to the Project Manager or Consultant.

Seismic isolation and clamping for each pump and flexible connection on the suction as well as the discharge side shall be provided.

Electric Fire Pump

General

The electric fire pump shall be suitable for automatic operation complete with necessary electric motor and automatic starting gear, suitable for operation on 415 volts, 3 phase, 50 Hz. A.C. system. Both the motor and the pump shall be assembled on a common base plate, fabricated M.S. channel type or cast iron type.

Drive

The pump shall be direct driven by means of a flexible coupling. Coupling guard shall also be provided.

Fire Pump

The fire pump shall be UL Listed and FM Approved horizontally mounted centrifugal type end suction pump. It shall have a capacity to deliver flow as specified, and developing adequate head so as to ensure a minimum pressure at the highest and the farthest outlet.

The pump casing shall be of cast iron to grade FG 260 and parts like impeller, shaft sleeve, wearing ring etc. shall be of non-corrosive metal like bronze/brass/gun metal. The shaft shall be of stainless steel. Seal shall be gland packing.

Bearings of the pump shall be effectively sealed to prevent loss of lubricant or entry of dust or water. The pump shall be provided with a plate indicating the suction lift, delivery head, discharge, speed and number of stages. The pump casing shall be designed to withstand 1.5 times the working pressure.

Motor

The motor shall be UL Listed and FM Approved, TEFC squirrel cage A.C. induction type suitable for operation on 415 volts 3 phase 50 Hz. system. The motor shall be totally enclosed fan cooled type conforming to protection clause IP 55. The class of insulation shall be F. The synchronous speed shall be 2900 /3000 RPM as specified. The motor shall be rated for continuous duty and shall have a horse power rating necessary to drive the pump at 150 per cent of its rated discharge with at least 65 per cent rated head.

Motor Starter

The motor starter shall be as per UL Listed and FM Approved detail in MCC. The unit shall include suitable current transformer and ammeter of suitable range on one line to indicate the current. The starter shall not incorporate under voltage, no voltage trip overload or SPP.

The starter assembly shall be suitably integrated in the power and control panel for the wet riser system & sprinkler system.

Diesel Fire Pump

The UL Listed and FM Approved heat exchange type diesel engine shall be suitable for automatic operation complete with necessary automatic starting gear, for starting on wet battery system and shall be complete with all accessories. Both engine and pump shall be assembled on a common base plate.

Drive

The pump shall be only direct driven by means of a flexible coupling. Coupling guard shall also be provided. The speed shall be 1500/1800 RPM as specified.

Fire Pump

The fire pump shall be UL Listed and FM Approved horizontally mounted end suction centrifugal type. It shall have a capacity to deliver as specified, and developing adequate head.

The pump casing shall be of cast iron to grade FG 260 and parts like impeller, shaft sleeves, wearing-ring etc. shall be of non-corrosive metal like bronze/brass/gun metal. The shaft shall be stainless steel. Seal shall be gland packing

The pump casing shall be designed to withstand 1.5 times the working pressure.

Bearing of pump shall be effectively sealed to prevent loss of lubricant or entry of dust or water.

Diesel Engine

Engine Rating - The engine shall be multi cylinder/vertical 4/6 stroke cycle, heat exchange type diesel engine, developing suitable HP at the operating speed of 3000 rpm specified to drive the fire pump. Continuous capacity available for the load shall be exclusive of the power requirement of auxiliaries of the diesel engine, and the after correction for altitude, ambient temperature and humidity for the specified environmental conditions. This shall be at least 20% greater than the maximum HP required to drive the pump at its duty point.

It shall also be capable of driving the pump at 150% of the rated discharge at 65% of rated head. The engine shall be capable of continuous non-stop operation for 8 hours and major overhaul shall not be required before 3000 hours of operation. The engine shall have 10% overload capacity for one hour in any period of 12 hours continuous run. The engine shall accept full load within 15 seconds from the receipt of signal to start.

Engine Accessories - The engine shall be complete with the following accessories:-

- Fly wheel dynamically balanced.
- Direct coupling for pump and coupling guard.
- Corrosion Resistor.
- Air cleaner.
- Fuel service tank support, and fuel oil filter with necessary pipe work.
- Elect. Starting battery (2X24 v).
- Exhaust silencer with necessary pipe work.

Governor.

Instrument panel housing all the gauges, including Tachometer, hour meter and starting switch with key (for manual starting).

Necessary safety controls.

Fuel System - The fuel shall be gravity fed from the engine fuel tank to the engine-driven fuel pump. The engine fuel tank shall be mounted either over or adjacent to the engine itself or suitably wall mounted on bracket. The fuel filter shall be suitably located to permit easy servicing.

All fuel tubing to the engine shall be with copper, with flexible hose connections where required. Plastic tubing shall not be permitted.

The fuel tank shall be of welded steel construction (3 mm. thick) and of capacity sufficient to allow the engine to run on full load for at least 8 hours subject to approval of controller of explosives for storage tank. The tank shall be complete with necessary wall mounted supports, level indicator (protected against mechanical injury) inlet, outlet, overflow connections and drain plug and piping to the engine fuel tank. The outlet shall be so located as to avoid entry of any sediment into the fuel line to the engine.

The fuel contamination tank of suitable size to be provided to avoid spoilage at the time of fuel tank leakage.

As semi rotary hand pump for filling the daily service tank together with hose pipe 5mtr.long with a foot valve etc. shall also form part of the scope of supply.

Lubricating Oil System- Forced feed Lub. Oil system shall be employed for positive lubrication. Necessary Lub. oil filters shall be provided, located suitably for convenient servicing.

Starting System- The starting system shall comprise necessary batteries (2x24v), 24 volts starter motor of adequate capacity and axle type gear to match with the toothed ring on the fly wheel. Bi metallic relay protection to protect starting motor from excessively long cranking runs suitably integrated with engine protection system shall be included within the scope of the work.

The capacity of the battery shall be suitable for meeting the needs of the starting system.

The battery capacity shall be adequate for 10 consecutive starts without recharging with cold engine under full compression.

The scope shall cover all cabling, terminals, initial charging etc.

Exhaust System - The exhaust system shall be complete with silencer suitable for outdoor installation, and silencer piping including bends and accessories needed for a run of 15 meter from the engine manifold. The total back pressure shall not exceed the engine manufacture's recommendation. The exhaust piping shall be suitably supported. Exhaust stack routing toward the loading dock should be coordinated with Architectural scheme.

Engine shut down mechanism- This shall be auto/ manually operated and shall return automatically to the starting position after use.

Governing System- The engine shall be provided with an adjustable governor to control the engine speed within 5% of its rated speed under all conditions of load up to full load. The governor shall be set to maintain rated pump speed at maximum pump load.

Engine Instrumentation- Engine instrumentation shall include the following:-

- Lub. oil pressure gauge.
- Lub. oil temperature gauge.
- Water pressure gauge.
- Water temperature gauge.
- Tachometer.
- Hour meter.

The instrumentation panel shall be suitably resident mounted on the engine.

Pipe Work - All pipe lines with fittings and accessories required shall be provided for fuel oil, lube.oil and exhaust systems, copper piping of adequate sizes, shall be used for Lube.oil and fuel oil. M.S. piping will be permitted for exhaust.

Anti-Vibration Mounting- Suitable vibration mounting duly approved by Project Manager shall be employed for mounting the unit so as to minimize transmission of vibration to the structure. The isolation efficiency achievable shall be clearly indicated.

Battery Charger-Necessary float and boost charger shall be incorporated in the control section of the power and control panel, to keep the battery in trim condition. Voltmeter to indicate the state of charge of the batteries shall be provided.

Pump Sets Assembly

On the main fire sprinkler and hydrant headers near pump sets a 150 mm dia by-pass valve located in an accessible location shall be provided along with a rate of flow rotameter calibrated in 1 pm and able to read 200% of the rated pump capacity. The delivery shall be connected to the fire tank.

Each and every pump set assembly shall be provided with suction valve (only for positive suction head), discharge valve, non-return valve and 150 mm dia Bourdon type pressure gauge with isolation valve.

Flexible Connectors

On all suction and delivery lines double flanged reinforced neoprene flexible pipe connectors shall be provided. Connectors should be suitable for maximum working pressure of each pipe line on which it is mounted and tested to a test pressure of 1:5 time the operating pressure. Length of the connector shall be as per manufacturers standard.

Interlocking

The following inter-locking between the main fire pumps, the jockey pump and the diesel engine driven pump.

Only one category of pumps will work at a time i.e. either jockey pump or main fire pumps or diesel driven pump.

	JOCKEY PUMP	WET RISER PUMP	DIESEL DRIVEN PUMP
i.	ON	OFF	OFF
ii.	OFF	ON	OFF
iii.	OFF	ON	ON

Vibration Isolation

Pump set shall be mounted on rolled steel channels and 150 mm thick inertia block spring and ribbed neoprene vibration isolation mounting shall support the inertia block onto a 100 mm thick concrete plinths. The spring mountings shall have a maximum deflection of 15 mm. Reference shall be made to the section on "Noise and Vibration" for further technical requirements.

Operating Conditions For The Fire Pumps

Description	Cut in	Cut out
Working Pressure	10.0 Bar	
Sprinkler Jockey Pump	9.0 Bar	10.0 bar
Sprinkler Hydrant Pump	9.0 Bar	10.0 bar
Main Fire Pump (Sprinkler System)	8.0 Bar	Manual
Main Fire Pump (Hydrant System)	7.0 Bar	Manual
Diesel Engine Driven Pump	6.0 Bar	Manual

- Jockey Pumps shall start and stop automatically through pressure switches.
- Jockey Pump shall stop when main pumps start.

Main/Diesel Engine driven fire pumps shall start automatically when pressure falls below the above specified limits, but stopping shall be manual.

Electrical Installation For Fire Pumps

All equipment's like panel / cable / switchgears etc. should be as per Electrical specifications.

DRAWINGS

The contractor shall refer the tender drawings attached in this section.

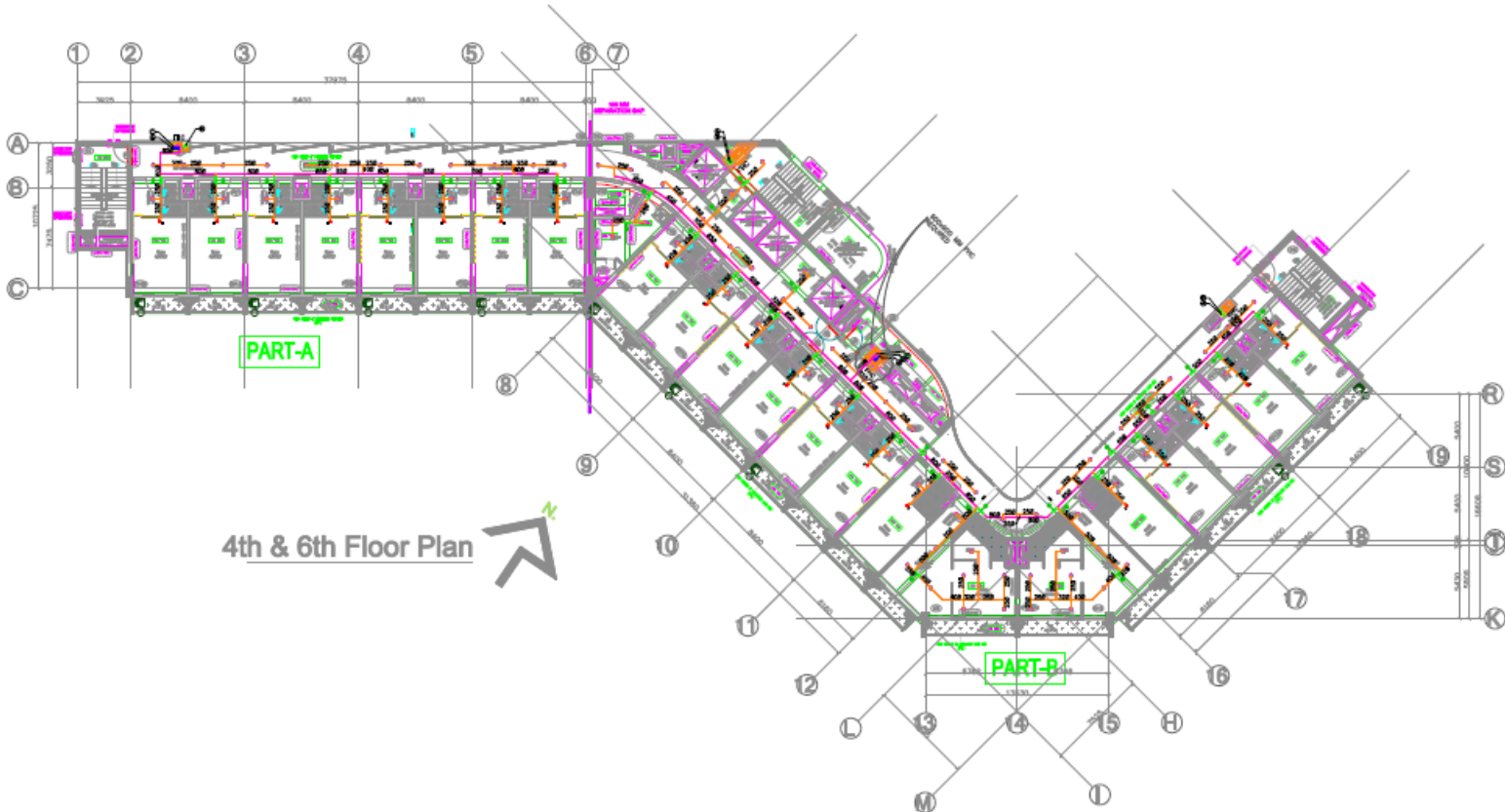
- A. 4TH & 6TH FLOOR PLAN FIRE FIGHTING LAYOUT
- B. 5TH & 7TH FLOOR PLAN FIRE FIGHTING LAYOUT
- C. 8TH FLOOR PLAN FIRE FIGHTING LAYOUT
- D. 9TH FLOOR PLAN FIRE FIGHTING LAYOUT
- E. DUCT FLOOR PLAN FIRE FIGHTING LAYOUT
- F. 1ST FLOOR PLAN FIRE FIGHTING LAYOUT
- G. GROUND FLOOR PLAN FIRE FIGHTING LAYOUT
- H. LOWER GROUND FLOOR PLAN FIRE FIGHTING LAYOUT
- I. SCHEMATIC FLOOR PLAN FIRE FIGHTING LAYOUT
- J. 2ND FLOOR PLAN FIRE FIGHTING LAYOUT
- K. TERRACE FLOOR PLAN FIRE FIGHTING LAYOUT
- L. 3RD FLOOR PLAN FIRE FIGHTING LAYOUT
- M. TYPICAL DETAIL FOR FIRE FIGHTING

FIRE FIGHTING LEGEND:-

S. No.	SYMBOL	DESCRIPTION
1.	A	100M FIRE HYDRANT PIPE FOR LOW ZONE
2.	B	90M SPRINKLER DRAIN PIPE
3.	C	150M SPRINKLER PIPE FOR LOW ZONE
4.		SPRINKLER BRANCH PIPE
5.		SPRINKLER MAIN PIPE
6.		PENDENT TYPE SPRINKLER
7.		UP-RIGHT TYPE SPRINKLER
8.		PENDENT TYPE HIGH TEMPERATURE TYPE SPRINKLER 79°C
9.		FLOW SWITCH
10.		WATER CURTAIN NOZZLE (K-58)

**SPRINKLER SIZE USED FOR
DIFFERENT ZONE**

NO. OF SPR.	TR. OF PIPE (MM)
1-2	25M
3	32M
4-5	40M
7-9	50M
10-18	65M
19-30	80M
61-100	100M
ABOVE 101	150M



4th & 6th Floor Plan



GENERAL NOTES

1. All work shall be done in accordance with the specifications and standards mentioned herein.
2. The contractor shall be responsible for obtaining all necessary permits and approvals from the relevant authorities.
3. The contractor shall ensure that the work is completed within the stipulated time frame.
4. The contractor shall maintain the safety of the site at all times.
5. The contractor shall ensure that the work is done in accordance with the approved drawings.
6. The contractor shall ensure that the work is done in accordance with the approved specifications.
7. The contractor shall ensure that the work is done in accordance with the approved standards.
8. The contractor shall ensure that the work is done in accordance with the approved codes of practice.
9. The contractor shall ensure that the work is done in accordance with the approved best practices.
10. The contractor shall ensure that the work is done in accordance with the approved industry standards.

DATE: 10/10/2024

PREPARED BY

NPAAE
NATIONAL PROJECT ARCHITECTS & ENGINEERS

ARKITECHNO
ARCHITECTURAL CONSULTANTS

SACPL
STRUCTURAL ARCHITECTS & CONSULTANTS

DENCITY
DESIGN & CONSTRUCTION

GOPALPUR PALM RESORT

SWOSTI PREMIUM LIMITED
PLOT NO. 10/10/2024

**4TH & 6TH FLOOR PLAN
FIRE FIGHTING LAYOUT**

FOR TENDER

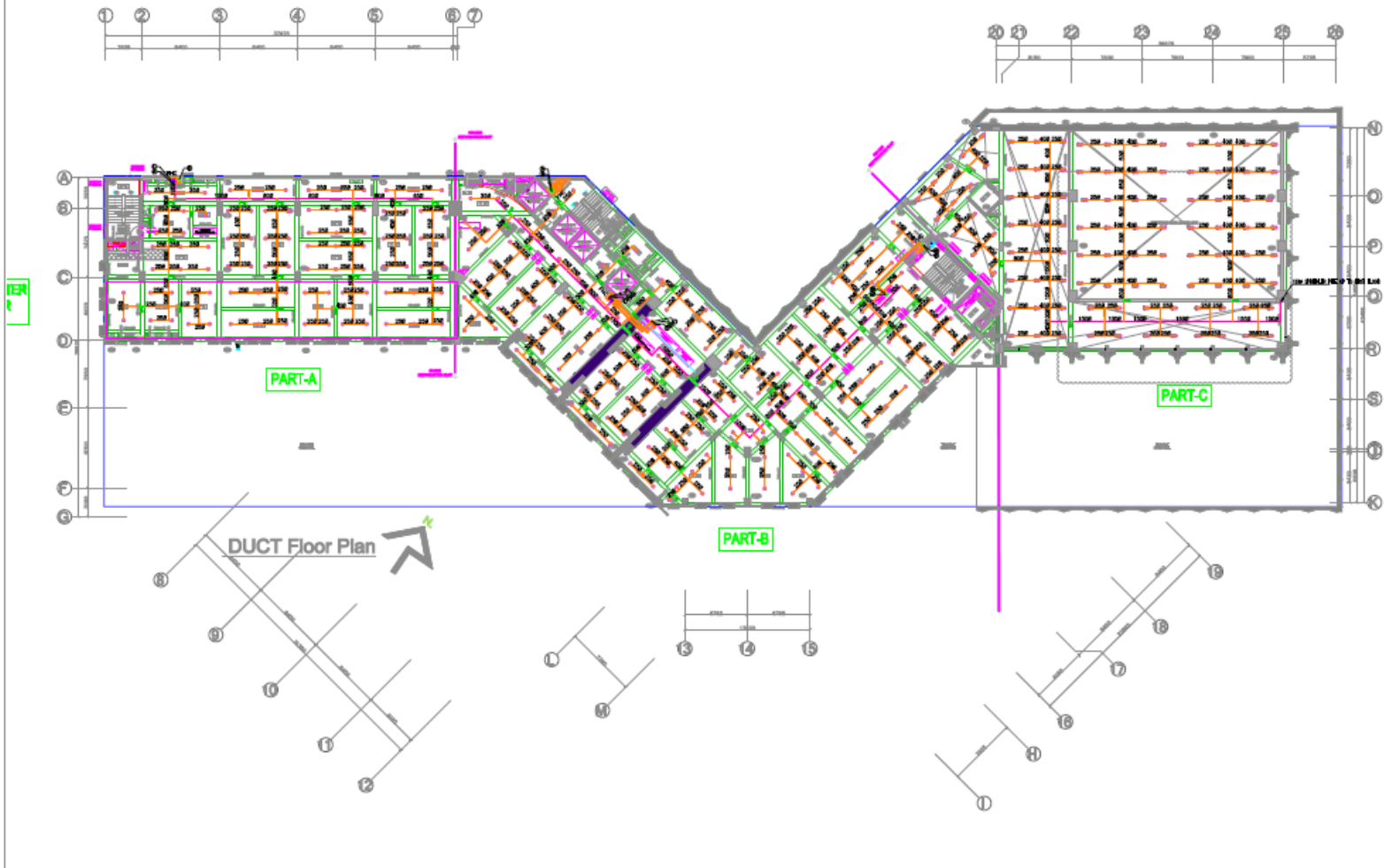
PROJECT NO.	10/10/2024	DATE	10/10/2024
SCALE	AS SHOWN	BY	AS SHOWN
CHECKED BY		APPROVED BY	

FIRE FIGHTING LEGEND:-

S. No.	SYMBOL	DESCRIPTION
1.	A	150# FIRE HYDRANT PIPE FOR LOW ZONE
2.	B	80# SPRINKLER DRAIN PIPE
3.	C	100# SPRINKLER PIPE FOR LOW ZONE
4.		SPRINKLER BRANCH PIPE
5.		SPRINKLER MAIN PIPE
6.		PENDENT TYPE SPRINKLER
7.		UP-RIGHT TYPE SPRINKLER
8.		PENDENT TYPE HIGH TEMPERATURE TYPE SPRINKLER 70°C
9.	FS	FLOW SWITCH
10.		WATER CURTAIN NOZZLE (K-58)

SPRINKLER FITS SIZES FOR MAIN LENGTH & TENDR:

NO. OF SPR.	DN OF PIPE (MM)
1-2	25#
3	32#
4-6	40#
7-9	50#
10-18	65#
19-30	80#
31-100	100#
ABOVE 101	150#



NOTES:

1. The contractor shall be responsible for the fire fighting system design and shall provide the fire fighting system design to the fire authority for their approval.
2. The fire fighting system shall be designed in accordance with the fire fighting code of practice.
3. The fire fighting system shall be designed to provide fire fighting facilities for the building.
4. The fire fighting system shall be designed to provide fire fighting facilities for the building.
5. The fire fighting system shall be designed to provide fire fighting facilities for the building.
6. The fire fighting system shall be designed to provide fire fighting facilities for the building.
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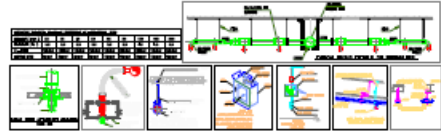
PROJECT INFORMATION:

CLIENT: SWOST PREMIUM LIMITED
PROJECT: GOPALPUR PALM RESORT
LOCATION: Gopalpur, Odisha - 751013

DESIGNER: ARKITECHNO
ARCHITECT: DENCITY
DATE: 15/08/2024

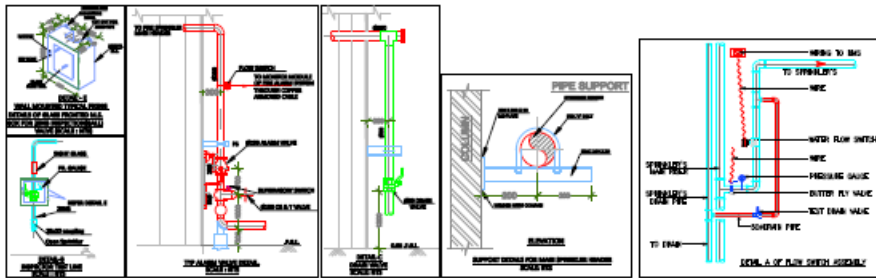
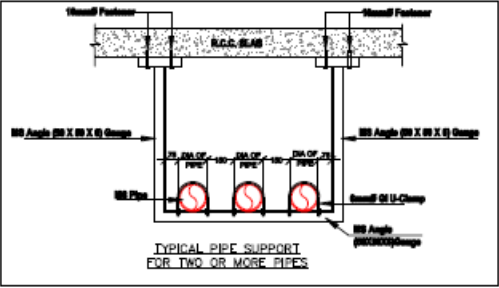
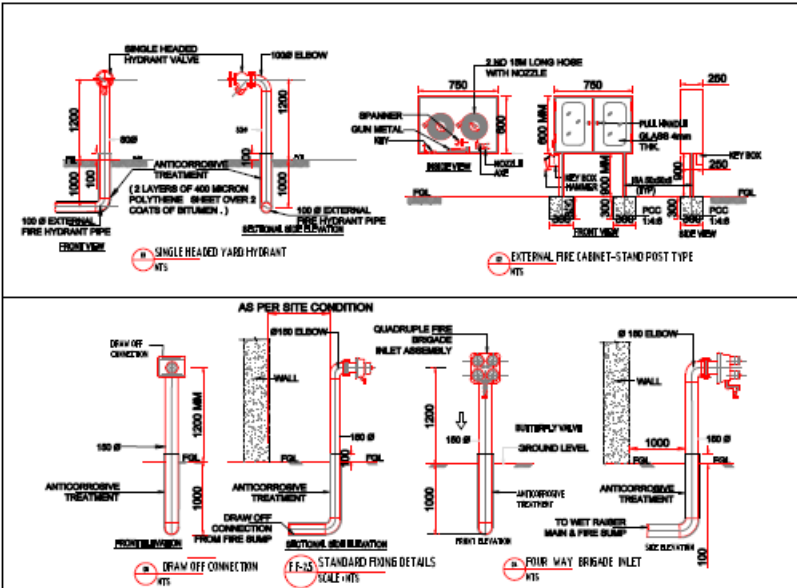
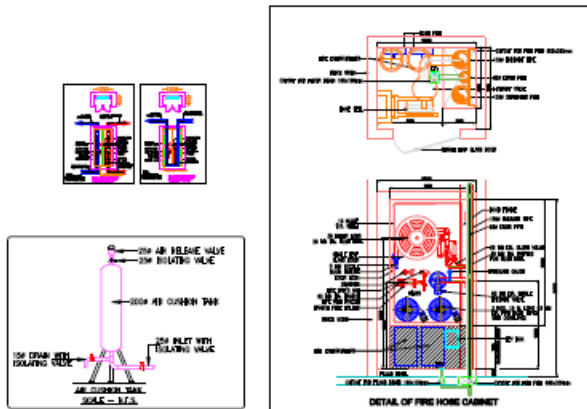
FOR TENDER

PROJECT NO.:	14/2024	SCALE:	AS SHOWN
DATE:	15/08/2024	BY:	AKASH K. SINGH
CHECKED BY:	AKASH K. SINGH	DATE:	15/08/2024



FIRE FIGHTING PIPE DIA REFER THIS TABLE	
DIA	CONNECTION
250	1-2
325	3
400	4-6
500	7-9
650	10-16
800	19-30
1000	81-100
1800	100 ABOVE

NOTE:- PLEASE SPRINKLER DISTANCE CHECK 1. SPRINKLER TO SPRINKLER DISTANCE MAXIMUM 3600mm & MINIMUM 2000mm. 2. SPRINKLER TO WALL DISTANCE MAXIMUM 1800mm & MINIMUM 750mm.



PROJECT INFORMATION

PROJECT NAME: **GOPALPUR PALM RESORT**
 Jdayapur, Gopdapur-ar-Sad, Ganjam, Odisha

CLIENT: SWOSHI PREMIUM LIMITED
 Plot No. 10, JAYDI VIHAR, BALUBANSARA, GEORHA - 751013

DESIGNED BY: ARKITECHNO
 101/102, Sector 10, Gurgaon, Haryana

DATE: 15/08/2024

FOR TENDER

PROJECT NO: SA/CSH
 DATE OF PREPARED: 15/08/2024
 SCALE: AS SHOWN
 CHECKED BY: [Signature]

SECTION-4

FINANCIAL PROPOSAL SUBMISSION FORM

(To be submitted in separate sealed Envelop)

{Location, Date}

To

The General Manager (Communications)
Swosti Premium Ltd.
Gopalpur Palm Resort Project
Email: gm.communications@swostihotels.com ear Sirs:

We, the undersigned, offer to provide the construction services for Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam on a Item Rate Contract Basis”, in accordance with your Request for Proposal dated _____ and our Technical Proposal.

“We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery. We undertake that, in competing for (and, if the award is made to us, in executing) the above contract, we will strictly observe the laws against fraud and corruption in force in India namely “Prevention of Corruption Act, 1988 (as updated from time to time).”

Our attached Financial Proposal is for the amount of {Indicate the corresponding to the amount(s) currency(ies)}{Insert amount(s) in words and figures}, “excluding” of all indirect local taxes as in the Data Sheet. The estimated amount of local indirect taxes is {Insert currency} {Insert amount in words and figures} which shall be confirmed or adjusted, if needed, during negotiations. {Please note that all amounts shall be the same as indicated above.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. before the date indicated in the Data Sheet.

We understand you are not bound to accept any Proposal you receive.

We remain,

Yours sincerely,

Authorized Signature {In full and initials}: _____ Name and Title of Signatory: _____

In the capacity of: _____

Address: _____

E-mail:

BOQ For Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd.,Gopalpur, Ganjam

Item	Description	Unit	Qty	Rate	Amount
A.	<u>FIRE FIGHTING PUMPS & EQUIPMENT WORKS</u>	-	-	-	-
1	Supplying, Installation, Testing and Commissioning of Factory Assembled electrically driven centrifugal fire pump , suitable for automatic / manual operation, consisting of the following: (BIS Approved)				
a	Horizontal type Single / Multi Stage centrifugal split casing pump with operating speed not exceeding 2900 rpm,suitable for operation on 415 volts \pm 10%, 3 phase, 50 HZ A.C. Fire pump shall have cast iron body and bronze impeller with stainless steel shaft, to ensure minimum pressure of 3.5 kg/cm ² at highest conforming to IS- 1520 complete with mechanical seals, safety relief valve. The installation shall be complete with necessary periodic testing of the working of pump set as well as testing of automation for proper completion of work and grooved flexible coupling and fitting shall be used.				
	Cable termination box should be of sufficient size to incorporate 2 no. of cable for termination.				
	Pump shall be capable of 150% of rated capacity at a head of 65% of the rated head. The shut off head should not exceed 120% of rated head.				
b	Suitable HP Squirrel cage Induction motor operation on 415V, 3 phase, 50Hz, AC supply for the above pump rating with synchronous speed of 1500 RPM, TEFC type conforming to IS-325 with IP:55 protection for enclosure, horizontal foot mounted with class F insulation, flexible coupling & coupling guard with the pump complete. complete.				
	The pump set shall be inclusive of base plate, foundation bolts, suitable vibration clamping arrangement as required with anti vibration pads, washers, Anti-vortex plate etc. (Civil work shall be excluded from Vendor scope)				
	Note:				
	*Liaisoning for fire approval will be in the scope of the vendor. *Onboard contractors need to recheck the pump head according to software-based hydraulic calculations. * The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.				
	Grooved fitting shall be used inside Pump Room. No welding is allowed.				
1.1	Main Motor Driven Hydrant fire pump				
	Discharge : 2850 liter per minute				
	HP / KW - 111 / 83				
	Pump head - 105 Mtrs Head	No	1		0
1.2	Main Motor Driven Sprinkler fire pump				

	Discharge : 2850 liter per minute				
	HP / KW - 111 / 83				
	Pump head - 105 Mtrs Head	No	1		
2	Supplying, Installation, Testing and Commissioning of Factory Assembled diesel engine driven centrifugal fire pump (Stand by pump) , suitable for automatic / manual operation, consisting of the following: (BIS Approved)				
a	Horizontal type Single/Multi stage, centrifugal split casing pump of cast iron body and bronze impeller with SS shaft to ensure minimum pressure of 3.5 kg/cm ² at highest conforming to IS- 1520 complete with mechanical seals, safety relief valve. The installation shall be complete with necessary periodic testing of the working of pump set as well as testing of automation for proper completion of work and grooved flexible coupling and fitting shall be used.				
	Cable termination box should be of sufficient size to incorporate 2 no. of cable for termination.				
	Pump shall be capable of furnishing 150% of rated capacity at a head of 65% of the rated head. The shut off head shall not exceed 120% of rated head.				
b	HE Cooled diesel engine developing required BHP at 1500 RPM with automatic / manual starting mechanism and other accessories for the pump, flexible coupling & coupling guard with the pump & common bed plate for mounting of engine & pump shall conforming to relevant BS/IS standard or NFPA with auto starting mechanism including day oil tank of 200 ltrs. for each engine with first charge of diesel fuel tank fabricated from 4mm MS sheet, painted with two coats of synthetic enamel paint over a coat of primer. The tank shall be fitted with Magnetic oil level indicator, MH with cover, drain valve, air vent including structural supports (painted with approved shade), 2 Nos. lead acid batteries of 12V/24V with battery charger and all required accessories, flexible coupling, coupling guard & exhaust pipe connection etc. The system should be complete with necessary pipe, fittings and valves for cooling system complete as required in all respects.				
c	Diesel engine Exhaust system of required length of Class `B' MS pipe of 150 mm dia or suitable diameter with approx 40 mtr each pump or as per site with bends, expansion joints including providing suitable supporting arrangements at suitable intervals, with glass wool insulation 50 mm thick of 150 Kg per cum density on all sides of exhaust pipe and silencer, with chicken mesh wrapping and 26 SWG aluminum sheet cladding complete as required.				

d	Supply, installation, testing and commissioning of diesel Fire pump control panel complete with necessary relays like no volt relay, over voltage and low voltage relays, contactors, timer, pressure switch, Automatic/Manual selector switch & 3 attempts starting device, timers and relays as required, push buttons, start/stop in manual mode Indicating lamp for high/ Low Lub. Oil pressure, High Water Temp and Engine on indication etc. as required for the auto start of the diesel engine in case of power failure complete with all accessories, wiring & cabling including connection to diesel engine complete as required all in conformity with the local Fire regulations. The diesel engine driven fire pump will start automatically in the event of pressure drop beyond preset limit or on mains failure or failure of electric driven pumps to start.				
e	The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as required with anti vibration pads, washers, Anti-vortex plate etc. (Civil work shall be excluded from Vendor scope)				
	Note :-				
	*Liaisoning for fire approval will be in the scope of the vendor. *Onboard contractors need to recheck the pump head according to software-based hydraulic calculations. * The contractor shall perform flushing tests at least three times, in accordance with the zone requirements. * First fill/charge of diesel in day oil tank by the contractor.				
	Grooved fitting shall be used inside Pump Room. No welding is allowed.				
2.1	Diesel engine driven fire pump for Hydrant & Sprinkler				
	Discharge : 2850 liter per minute				
	Pump head - 105 Mtrs Head	No	1		
3	Supply, Fixing, Testing & Commissioning of fire authority approved electrical motor driven JOCKEY PUMP , suitable for automatic operation consisting of following : (BIS Approved)				
a	Horizontal type Single/Multi stage outlet centrifugal pump of cast iron body and bronze impeller with SS shaft to ensure minimum pressure of 3.5 kg/cm ² at highest conforming to IS- 1520 complete with mechanical seals, safety relief valve. The installation shall be complete with necessary periodic testing of the working of pump set as well as testing of automation for proper completion of work and grooved flexible coupling and fitting shall be used.				
b	Squirrel cage TEFC induction motor for operation on 415 V, 3 phase 50 HZ AC supply for the above pump with synchronous speed of 2900 RPM, flexible coupling and coupling guard etc. as required, IP 55 protection and 'F' Class insulation, vacuum impregnated windings with heat and moisture resisting varnish for the above pump. The motor shall be rated for continuous duty and shall have HP rating necessary to drive the pump at 150% of it's rated discharge at 65% of rated head.				

c	The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as required with anti vibration pads, washers, Anti-vortex plate etc. (Civil work shall be excluded from Vendor scope)				
d	Note :-				
	*Liaisoning for fire approval will be in the scope of the vendor.*Onboard contractors need to recheck the pump head according to software-based hydraulic calculations.* The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.				
	Grooved fitting shall be used inside Pump Room. No welding is allowed.				
3.1	Main Motor Driven Jockey fire pump for Sprinkler				
	Discharge : 180 liter per minute				
	HP / KW - 7.0 / 5.2				
	Pump head - 105 Mtrs Head	No	1		
3.2	Main Motor Driven Jockey fire pump for Hydrant				
	Discharge : 180 liter per minute				
	HP / KW - 7.0 / 5.2				
	Pump head - 105 Mtrs Head	No	1		
4	Supplying, Installation, Testing and Commissioning of Factory Assembled electrically driven centrifugal fire pump water curtain pump suitable for automatic / manual operation, consisting of the following:				
a	Horizontal end suction pump of cast iron body and bronze impeller with stainless steel shaft, to ensure minimum pressure of 1.4 kg/cm ² at farthest nozzle, conforming to IS- 1520 complete with mechanical seals, safety relief valve, pressure gauges on delivery side.				
	Pump shall be capable of 150% of rated capacity at a head of 65% of the rated head. The shut off head should not exceed 120% of rated head.				
b	Squirrel cage TEFC induction motor, suitable for operation on 415 volts, 3 phase 50 HZ A.C supply with synchronous speed of 2900 RPM for the above pump conforming to IP 55 protection & class F insulation. The motor shall conform to IS 325-1978 (up to date) with flexible coupling and coupling guard, complete as required.				
c	The pump set shall be inclusive of base plate, coupling, coupling guard and foundation bolts, suitable vibration clamping arrangement as required with anti vibration pads, washers etc. (Civil work shall be excluded from Vendor scope)				
	Note :-				
	*Liaisoning for fire approval will be in the scope of the vendor.*Onboard contractors need to recheck the pump head according to software-based hydraulic calculations.* The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.				
	Grooved fitting shall be used inside Pump Room. No welding is allowed.				
4.1	Main Motor Driven water curtain fire pump				
	Discharge : 900 liter per minute				

	HP / KW : 8.3 HP / 6.2 KW Approx.				
	Minimum head - 25 Meter	No	1		
5	Supply, installation and testing of cylindrical type flanged pressure vessel tank , 450 mm dia, 2 m long and of 10 mm thick M.S. common for a set of fire pumps including flanged connection, suitable supporting legs with MS plate of size 75x75x5 mm at the bottom and grouted in CC foundation. The air vessel tank shall be provided with air release valve, stop cock, safety valve, pressure gauge, 50 mm dia drain valve, suitable length of connecting pipe and valve from delivery header to vessel tank, suitable pressure switches to operate all pumps (1 nos for each Pump), tested to min 20 KG/cm ² complete including painting with synthetic enamel paint of approved shade with all accessories as per direction of the Engineer-in-charge. (For Pump House).	No.	3		
6	Providing and fixing heavy class GI suction & delivery headers of required length conforming to IS:1239 / IS:3589 with Grooved Fittings and with end flange connections having inlet & outlet flanged connections including GI supports from wall, floors & ceiling complete as required. Cost should be inclusive of all supports / clamps / brackets, anchor fastner as required (all in GI) and providing tapping for pressure gauges and for other instruments etc. All hangers, clamps, brackets etc. shall be of MS duly painted with two coats of synthetic enamel paint with coat of zinc primer unless specified otherwise and then supply of the same shall also be included for rates under this head. Hydrostatic testing of system at 1.5 times of operating pressure or 20 kg / sq cm whichever is higher and as specified, flushing & cleaning by water etc. complete as per drawings & direction of the Engineer-in-charge.				
	The quoted rates shall also include for making holes in masonry wall, chases in wall wherever required & making good the same by sealing the opening to original conditions. The rate shall also include painting of the pipeline with two coat of Zinc chromate primer and two or more coats of synthetic enamel paint of approved shade. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. including providing painting of legend both direction arrow as per the approved of project manager.				
	<i>Note:- The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.</i>				
	Grooved Coupling shall be UL,FM,Vds & LPCB approved . Grooved fitting shall be UL/FM approved				
	Grooved fitting shall be used inside Pump Room. No welding is allowed.				
6.1	50 NB (IS: 1239, 4.5 mm thick)	RM	15		
6.2	65 NB (IS: 1239, 4.5 mm thick)	RM	15		
6.3	80 NB (IS: 1239, 4.5 mm thick)	RM	15		
6.4	100 mm dia (IS: 1239, 5.4 mm thick)	RM	15		
6.5	150 NB (IS: 1239, 5.4 mm thick)	RM	50		
6.6	200 MM NB (IS: 3589, 6.3 mm thick)	RM	20		
6.7	250 MM NB (IS: 3589, 6.3 mm thick)	RM	30		

6.8	300 mm dia (IS: 3589, 7.1 mm thick)	RM	30		
7	Providing, Fixing, Testing & Commissioning Of Ductile Iron FM approved Grooved OS & Y Sluice Valves with 250 psi (1725 kPa), grooved ends. Ductile iron body conforming to ASTM A-536, cast iron yoke and hand wheel conforming to ASTM A-126-B; EPDM coated ASTM A-126-B cast iron disc; ASTM B16 brass rising stem; flanged and epoxy coated cast iron bonnet; EPDM o-ring stem seals and body gasket.				
7.1	50 MM NB	No.	QR		
7.2	65 MM NB	No.	2		
7.3	80 MM NB	No.	2		
7.4	100 MM NB	No.	QR		
7.5	150 MM NB	No.	6		
7.6	200 MM NB	No.	4		
7.7	250 MM NB	No.	2		
7.8	300 MM NB	No.	4		
8	Providing & fixing UL listed DI body Grooved End Y-Strainer (PN 16) confirming to ASTM A-536, Grade 65-45-12 with SS 304 screen including all fittings complete as required complete.				
8.1	300 mm dia	No.	2		
9	Providing & fixing 100 mm dia glycerin filled pressure gauge with isolation valve including making connections with SS pipe complete in all respects.	No.	6		
10	Providing, fixing, testing & commissioning of ductile iron UL & FM approved grooved end type check valve complete with matching fittings, gaskets, fasteners conforming to ASTM A-536, Grade 65-45-12, non-slam tilting Stainless steel disc upto 3inch (365psi) and elastomer encapsulated ductile iron disc from 4inch -12inch (300psi).				
10.1	65 mm dia	Each	2		
10.2	150 mm dia	Each	4		
10.3	250 mm dia	Each	1		
11	Providing, fixing and commissioning of grooved end pressure loaded relief valve along with drain arrangement suitable for pressure of 16 Kg / sq.cm including all required fitting , nuts, bolts.				
11.1	150 mm dia	Each	1		
11	Providing, fixing, testing, and commissioning UL / FM approved Fire Pump test Flow Meter with suitable meter range, suitable for maximum working pressure 20.0 Bar, in-line installation as shown in drawings and of approved make as specified.				
11.1	150 NB	No.	1		

	TOTAL CARRIED TO SUMMARY				
	B. INTERNAL & EXTERNAL HYDRANT PIPE WORKS				
1	<p>Providing, laying, jointing, testing, and commissioning of following sizes of ERW GI. pipes (Class C - heavy duty) conforming to IS:1239 with all accessories like all fittings tees, elbows, reducers, union, flange Adapters, rubber gaskets, flexible coupling (installation where pipe crosses the building expansion joint), GI nuts bolts, and washer including supporting/fixing the pipe on floor/wall/ceiling with clamps, hangers (using anchor fasteners) as per specification. MS pipe sleeves of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end which gives 2 hour fire rated follows IS 12458 & UL 1479 all as per Engineer requirements including cutting holes and chases in brick, R.C.C work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets, etc. shall be of galvanized iron unless specified otherwise, and then the supply of the same shall also be included for rates under this head. Welding of any kind on the galvanized support/hanger shall not be permitted.</p>				
	<p>The pipes and accessories will be provided with all type of supports (Maximum Support spacing = up to 25 mm dia @ 2 m, M10 size for up to 100 mm dia @ 2.5 m, & M12 size for 150 mm & above dia @ 3 m) by minimum 3 mm thick G.I. clevis / sprinkler hangers / clamps / Tie rod supports with G.I. nuts, bolts, anchor / dash fastner and washer for hydrant / sprinkler piping, for 150 mm dia pipe the support will be through 50x50x6 mm painted MS angle iron along with G.I. U clamp, nuts, washers, Stud rod & anchor fasteners etc as the case may be.</p>				
	<p>The quoted rates shall also include for making holes in masonry wall, chases in wall wherever required & making good the same by sealing the opening to original conditions. The rate shall also include painting of the pipeline with two coat of Zinc chromate primer and two or more coats of synthetic enamel paint of approved shade. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. including providing painting of legend both direction arrow as per the approved of project manager.</p>				
	<p>upto 50 mm dia. pipe threaded fittings and threaded joints shall be provided (jointed by Teflon tape) and for 65 mm Dia & above pipes shall be Grooved joints. The Ductile iron fittings or Malleable Iron (IS : 1879) fittings shall be heavy duty suitable to withstand at least a pressure of 150% of maximum working pressure with minimum of 20 kg/cm2. (Internal & External for above ground)</p>				
	<p>Grooved Coupling shall be UL,FM,Vds & LPCB approved . Grooved fitting shall be UL/FM approved</p>				
	<p><u>Note:- The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.</u></p>				
1.1	25 NB	RM	130		
1.2	80 NB	RM	35		
1.3	100 NB	RM	10		

1.4	150 NB	RM	1040		
2	<p>Providing, laying, jointing and testing in trenches the following sizes of ERW GI. pipes (Class C - heavy duty) pipes (as per IS:1239 for upto 150 mm dia) including transportation of materials upto the worksite, cutting the pipes to required length, edge preparation, fixing / erection of pipes including all Grooved fitting like specials i.e. bends, tees, reducers, flanges and expansion joints wherever required, washers, nuts, bolts etc. in proper position including all supports, providing tapping for pressure gauges and for other instruments etc. Hydrostatic testing of system at 1.5 times of operating pressure or 20 kg / sq cm whichever is higher and as specified, flushing & cleaning by water etc. The laying of pipe including the excavation in all kind of soil, refilling, ramming, shoring, removing the excavated surplus material, providing adequate support to the pipe and making good the same, taking connection from existing pipes complete as required & direction of the Engineer-in-charge.</p> <p>The rates will include providing and laying 4 mm thick "Pypkote" tar based polymeric corrosion protection tape over coat of zinc chromate primer as per manufacturers specs, as directed by Engineer-in-charge.and as per IS:10221.</p> <p>(Underground pipe)</p> <p><i>Note:- The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.</i></p> <p><i>Grooved coupling shall be used . Flexible type coupling to be used incase of buried services.</i></p>				
2.1	80 NB	RM	15		0
2.2	100 NB	RM	25		0
2.3	150 NB	RM	QR		-
3	<p>Providing, erection, testing, and commissioning of weatherproof standard fire hose cabinet (750 mm x 600 mm x 250 mm) outdoor type made of SS 304 of not less than 16 SWG SS sheet having a glassed hinged door (5 mm thick glass) including necessary locking arrangement with handle for housing two nos. 15-meter long fire hose pipes, branch pipe as required As per drawings, including brackets for mounting accessories. The cabinet shall be mounted on a self-standing mounted type MS Angle iron frame with painting (one coat primer and two coats of fire red color) complete as required. The words "FIRE HOSE" are to be painted / paste on the box.</p> <p>(for External)</p>	Nos	11		
4	<p>Providing, erection, testing, and commissioning of standard fire hose SS 304 Single / Double door with frame (2100 mm x 1200 mm) or (suitable to fit in the duct made of not less than 16 SWG SS sheet having glass hinged door (5 mm thick glass) including necessary locking arrangement with handle and Allen key box as per drawings, including brackets for mounting accessories painting (one coat primer and two coats of fire red color). The door shall be fixed in the masonry wall or as required. The words "FIRE HOSE" are to be painted on the box.</p>	Nos	58		

5	Providing, fixing, testing & commissioning of 20 mm bore and 30 meter long hose Thermo plastic (Textile reinforced) fire hose reel (IS 884), (The complete assembly shall be capable of withstanding the hydrostatic test pressure 21 kg/sqcm), for first aid fire fighting conforming to IS : 884, with 180o full swing drum, fixing brackets, 5 mm dia shut off Gun Metal nozzle, connecting directly from the riser through 40 mm dia. G.I. (Class C) pipe with sockets, elbows, nipples, 40x20 mm reducer, 20 dia pipe, 20 mm dia. hand lever operated isolating ball valve, etc. including providing operating instructions on a metal plate and fixing it near hose reel. The system shall be complete in all respects as per drawings and directions of Engineer-in-charge.	Nos	58		
6	Providing, Fixing, testing and commissioning of IS approved 63 mm. dia. male Instantaneous pattern short GM Metal Short branch pipes with 15 mm dia. Nozzle as per IS : 903, suitable for hydrostatic test pressure 21 kg/scum and suitable for interconnections to hose pipe coupling as required.	Nos	69		
7	Providing, Fixing, testing and commissioning of ISI marked RRL (IS : 636, type-A) fire hose pipe 15 meter long and 63 mm dia with ISI marked (IS : 903) suitable for hydrostatic test pressure 21 kg/scum, GM Metal male and female coupling bound and riveted to hose pipes with copper rivets and copper wire complete as required.	Nos	138		
8	Providing & fixing standard carbon steel fireman axe with rubber insulated handle tested to 20000 Volts.	Nos	69		
9	Providing & fixing 100 mm dia glycerin filled pressure gauge in SS with isolation valve including making connections with SS pipe complete in all respects.	Nos	69		
10	Providing, fixing, testing, and commissioning of ISI-marked single-headed 63 mm dia. Gun metal Hydrant Valve (Type A) suitable for hydrostatic test pressure of 21 kg/scum, 80 mm dia flanged inlet with 63 mm female instantaneous outlet confirming to IS: 5290 on the fire wet riser/down comer, including making 80 NB pipe connection with riser, fixing the landing valves in proper positions, including supply of nuts,ABS blank cap & chain bolts, gaskets, caps, chains, etc. testing the hydrant and completing the work in all respect as per directions of the Engineer-in-charge. Grooved Flanged Adapter shall be used for connection of Hydrant Valve. (For Internal hydrant)	Nos	43		

11	Supply & installation of ISI marked single headed 63 mm dia. gun metal Hydrant Valve (Type A) with inbuilt PRV suitable for hydrostatic test pressure of 21 kg/sqcm, 80 mm dia flanged inlet with 63 mm female instantaneous outlet confirming to IS : 5290 on the fire wet riser/down comer, including making 80 NB pipe connection with riser, fixing the landing valves in proper positions, including supply of nuts, bolts, gaskets, caps, chains etc. testing the hydrant and completing the work in all respect as per directions of the Engineer-in-charge. (For Internal & External hydrant)	Nos	26		
12	Providing, installation and testing of cylindrical type flanged air cushion tank , 250 mm dia, 1200 mm long and of thickness 8 mm M.S., suitable supporting legs with MS plate of size 75x75x5 mm at the bottom and grouted in CC foundation. The air cushion tank shall be provided with air release valve, stop cock, safety valve, pressure gauge, 25 mm dia drain valve, suitable length of 50 mm dia (MS-C class) connecting pipe from riser and tank, tested to min 20 Kg/cm ² complete including painting with synthetic enamel paint of approved shade with all accessories as per direction of the Engineer-in-charge. (For Hydrant Risers)	Nos	5		
13	Providing & fixing air release valve with forged brass body full way ball valve type isolating valve, flanges / union, suitable for Sprinkler / Wet Riser / Down comer system with all necessary connections complete in all respects. (For Hydrant Risers)				
13.1	25 mm dia Air Release Valve	Nos	QR		
14.0	Providing, Fixing, Testing & Commissioning Of Ductile Iron Grooved End Butterfly Valves 300 psi CWP (2065 kPa) suitable for bidirectional and dead-end service at full rated pressure. Body shall be grooved end black enamel coated ductile iron conforming to ASTM A536. Disc shall be [electroless nickel plated ductile iron] [stainless steel] [aluminum bronze] with blowout proof 416 stainless steel stem. The butterfly valves should be inbuilt tamper switch with potential free contact with 2 nos. NONC. (Note : The integration of Temper Switch / Supervisory Switch with Fire Alarm System shall be carried out by Fire Alarm System Contractor) (For Hydrant System)				
14.1	150 mm	No.	9		
14.2	100 mm	No.	QR		
14.3	80 mm	No.	13		
15.0	Providing, fixing, testing & commissioning of ductile iron FM approved grooved end type check valve complete with matching fittings, gaskets, fasteners conforming to ASTM A-536, Grade 65-45-12, non-slam tilting Stainless steel disc upto 3inch (365psi) and elastomer encapsulated ductile iron disc from 4inch -12inch (250psi).				
15.1	150 mm for Terrace	No.	1		

16	Providing and fixing heavy duty SS Floor grating with frame of approved design including setting in floor with cement motor to match with floor finish as per architect requirement. (for FHC drain pipe)				
16.1	Size 100 mm x 100 mm	Nos.	58		
17	Providing and Fixing of cast iron body 4 way 63 mm dia male instantaneous inlet coupling complete with inbuilt NRV, ABS cap and G.I chain for fire brigade connection conforming to IS : 904 and making connection with fire fighting pipe or under ground water tank, completing the work in all respect as per the directions of the Engineer-in-charge.	Nos.	2		
18	Providing and fixing of cast iron body 100 mm dia Draw out connection in Under ground water storage tank with heavy class G.I suction pipe of required length, 2 Nos of float valve, suction coupling in conformity with local regulations complete in all respects.	Nos.	1		
19	Constructing brick masonry chamber 90 x 90 x 120 cm inside with FPS brick work in cement mortar 1 : 5 (1 cement : 5 fine sand) for sluice valve with Ductile Iron Recessed type manhole cover and frame (heavy duty HD-20 grade designation), 560 mm internal diameter conforming to IS:12592, total weight of cover and frame to be not less than 182 Kg in cement concrete 1:2:4 and RCC top slab 1:2:4 mix (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:4 (1 cement : 4 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.				
19.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5	Nos.	2		
TOTAL CARRIED TO SUMMARY					
C. <u>SPRINKLER SYSTEM WORKS</u>					

1	<p>Providing, laying, jointing, testing, and commissioning of following sizes of ERW GI. pipes (Class C - heavy duty) conforming to IS:1239 with all accessories like all fittings tees, elbows, reducers, union, flange Adapters, rubber gaskets, flexible coupling (installation where pipe crosses the building expansion joint), GI nuts bolts, and washer including supporting/fixing the pipe on floor/wall/ceiling with clamps, hangers (using anchor fasteners) as per specification. MS pipe sleeves of suitable higher size shall be provided wherever the pipes are crossing the walls/floors and sealing the sleeves with glass wool in between & fire sealant compound at either end which gives 2 hour fire rated follows IS 12458 & UL 1479 all as per Engineer requirements including cutting holes and chases in brick, R.C.C work and making good the same to original conditions complete in all respects. All hangers, clamps, brackets, etc. shall be of galvanized iron unless specified otherwise, and then the supply of the same shall also be included for rates under this head. Welding of any kind on the galvanized support/hanger shall not be permitted.</p>				
	<p>The pipes and accessories will be provided with all type of supports (Maximum Support spacing = up to 25 mm dia @ 2 m, M10 size for up to 100 mm dia @ 2.5 m, & M12 size for 150 mm & above dia @ 3 m) by minimum 3 mm thick G.I. clevis / sprinkler hangers / clamps / Tie rod supports with G.I. nuts, bolts, anchor / dash fastner and washer for hydrant / sprinkler piping, for 150 mm dia pipe the support will be through 50x50x6 mm painted MS angle iron along with G.I. U clamp, nuts, washers, Stud rod & anchor fasteners etc as the case may be.</p>				
	<p>The quoted rates shall also include for making holes in masonry wall, chases in wall wherever required & making good the same by sealing the opening to original conditions. The rate shall also include painting of the pipeline with two coat of Zinc chromate primer and two or more coats of synthetic enamel paint of approved shade. Prior to application of primer the surface should be cleaned for any dirt, rusts, rough substance etc. including providing painting of legend both direction arrow as per the approved of project manager.</p>				
	<p>upto 50 mm dia. pipe threaded fittings and threaded joints shall be provided (jointed by Teflon tape) and for 65 mm Dia & above pipes shall be Grooved joints. The Ductile iron fittings or Malleable Iron (IS : 1879) fittings shall be heavy duty suitable to withstand at least a pressure of 150% of maximum working pressure with minimum of 20 kg/cm2..</p>				
	<p>Grooved Coupling shall be UL,FM,Vds & LPCB approved . Grooved fitting shall be UL/FM approved</p>				
	<p><u>Note:- The contractor shall perform flushing tests at least three times, in accordance with the zone requirements.</u></p>				
1.1	25 NB	RM	5740		
1.2	32 NB	RM	285		
1.3	40 NB	RM	865		
1.4	50 NB	RM	475		
1.5	65 NB	RM	590		
1.6	80 NB	RM	1110		
1.7	100 NB	RM	395		

1.8	150 NB	RM	655		
2	Supply, fixing, testing & commissioning of brass quartzoid quick response threaded type sprinklers (K=80), comprises of 15mm dia, glass bulb type, UL listed & FM approved. The jointing shall be done by teflon tape and the installation shall be complete as per the drawings with positioning of sprinklers as per final coordinated plan and requirement of IS:15105, local fire service & Engineer-in-charge.				
2.1	Pendant / Upright sprinkler (68 deg.C)	No.	2,890		
2.2	Concealed flush sprinkler (68 deg.c)	No.	QR		
2.3	Pendant / Upright sprinkler (93 deg.C)	No.	30		
2.4	Sidewall normal coverage (68 deg.C) sprinkler	No.	QR		
2.5	Sidewall Extended coverage (68 deg.C) sprinkler	No.	120		
2.6	Sidewall Facade (68 deg.C) sprinkler (Standard coverage)	No.	QR		
	Note:-				
i	All sprinkler shall be chrome finish / powder coated except for the concealed ones. The concealed sprinkler shall be of brass finish. The cover plates of the concealed sprinkler shall be factory painted at manufacturer's work and the shade shall be confirmed prior to application on the cover plate.				
ii	The sprinkler shall be either pendent OR upright / sidewall type and shall not be universal style / nature.				
iii	Providing and Fixing of rosset plate foe Pendent sprinkler complete in all respect				
	-				
3	Providing and fixing SS 304 cabinet (size 600 x 450 x150 mm) fabricated from 16 gauge SS sheet with full front glass door & locking arrangement with suitable sleeves for keeping 60 Nos. spare sprinklers & one no. spanner properly fixed in shelves. Cabinet shall be painted with enamel paint of approved shade. Cost shall include 60 Nos. Spare Sprinkler (Pendant 60 Nos, Up-Right 60 Nos & Facade Side Wall 60 Nos) Spare sprinklers Teflon tape & One No. spanner.	Set	1		0
4	Supply, fixing, testing & commissioning of UL / FM listed / approved SS 304 braided sprinkler flexible hose having branch line inlet of 25 mm dia and sprinkler head outlet of 15 mm dia, snap, clamp, T-bar bracket (according to False ceiling) etc. with necessary fitting complete as required & suitable for hydrostatic test pressure 21 kg/sqcm. The installation shall be complete as per the drawings with positioning of sprinklers as per final coordinated plan and requirement of IS : 15105, local fire service & Engineer-in-charge.Hose shall have bending radius of 176mm				
4.1	1000 mm length	No.	833		
4.2	1200 mm length	No.	278		
4.3	1500 mm length	No.	278		

5	Providing, Fixing, Testing & Commissioning Of Ductile Iron Grooved End Butterfly Valves 300 psi CWP (2065 kPa) suitable for bidirectional and dead-end service at full rated pressure. Body shall be grooved end black enamel coated ductile iron conforming to ASTM A536. Disc shall be [electroless nickel plated ductile iron] [stainless steel] [aluminum bronze] with blowout proof 416 stainless steel stem. The butterfly valves should be inbuilt tamper switch with potential free contact with 2 nos. NONC. (Note : The integration of Temper Switch / Supervisory Switch with Fire Alarm System shall be carried out by Fire Alarm System Contractor)				
5.1	80 mm	No.	QR		
5.2	100 mm	No.	QR		
5.3	150 mm	No.	27		
6	Providing & fixing UL listed and FM approved water flow detectors / switches (Retardant type) for sprinkler system, shall have sensitivity in the range of 4 to 10 US gallon per minute and static pressure rating of 450 PSI including accessories, junction box, suitable for indoor / outdoor mounting. The detector shall respond to water flow in the specified direction after a preset time delay that is field adjustable, complete as required suitable for fixing on fire pipe including connection for wiring complete as per Engg. In-Charge				
	<u>Note - Integration of Flow Switches, Temper switches valve, ICV, Deluge Valve & control cable from FF devices to control module / monitor module shall be in the scope of Fire Alarm Contractor</u>				
6.1	for 80 mm diameter pipe	Set	QR		
6.2	for 100 mm diameter pipe	Set	QR		
6.3	for 150 mm diameter pipe	Set	24		
7	Providing & Fixing of FM approved Installation Control Valve with Grooved Ends with Black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring and shaft, EPDM seal, and Nitrile seat O-rings. Valve internal parts shall be replaceable without removing the valve from the installed position. The water working pressure is 300 psi. Suitable for constant and variable pressure systems with optional retard chamber & as per manufacturer's specifications complete as required.				
	<u>Note - Integration of Flow Switches, Temper switches valve, ICV, Deluge Valve & control cable from FF devices to control module / monitor module shall be in the scope of Fire Alarm Contractor</u>				
	-				
7.1	150 mm diameter	Set	2		

8	Providing, fixing, inspecting, testing of drain assembly for installation on Sprinkler System, in brass body consisting of steel single lever ball valve for multiple test and drain functions, including inlet connection of specified size, sight glass, connections to the main header and line drain complete as per requirements. Product shall suitable for min. 16 kg/cm ² working pressure and shall be UL Listed / FM Approved.				
8.1	50mm Drain size and 15mm (5.6K) Testing Orifice	Set	24		
9	Providing & fixing air release valve with forged brass body full way ball valve type isolating valve, flanges / union, suitable for Sprinkler / Wet Riser / Down comer system with all necessary connections complete in all respects				
9.1	25 mm dia Air Release Valve	Nos.	3		
10	Supply, fixing, testing & commisioning of UL / FM listed / approved 15 mm NB water curtain nozzle SS - 304 chrome plated complete including fixing in position on pipe complete in all respects with Teflon tape.	Nos.	14		
11	Providing and Fixing of UL/FM Approved Deluge Valve with Grooved Ends low differential, latched clapper design, black enamel coated ductile iron body conforming to ASTM A-536, grade 65-45-12, aluminum bronze clapper, stainless steel spring, and shaft, peroxide cured EPDM diaphragm, EPDM seal, brass seat, and Nitrile seat O-rings. & S.S Shaft complete with Electrical release trim, Hydraulic Release trim, Pressure Switch, Solenoid valve actuator and Control Panel, control wiring including necessary accessories, complete with tap-off socket arrangement as required, with potential free contact with 2 Nos. NO/NC & ON/OFF arrangement and all other associated works of complete as required. (For Water Curtain). Solenoid valves comes with 24VDC and must be converted to used for FACP				
	<u>Note - Integration of Flow Switches, Temper switches valve, ICV, Deluge Valve & control cable from FF devices to control module / monitor module shall be in the scope of Fire Alarm Contrator</u>				
11.1	150 mm dia	Nos.	2		
	TOTAL CARRIED TO SUMMARY				
	D. HAND APPLIANCE SYSTEM				
	Supply, installation, testing and commissioning of following types of extinguisher with provision of wall bracket (fixed with anchor fastner) / floor supported as required.				
1	ISI marked CO ₂ Portable Fire extinguisher, Carbon-Dioxide type Flat base Horn Including Valve, High Pressure Rubber Wire Braided Discharge Hose of not less than 10 mm dia. & complete in all respects including initial fill with CO ₂ Gas confirming to IS:15222.				

1.1	CO2 gas type. 4.5 kg. capacity	No.	75		
2	ISI marked ABC MAP-90% Powder based Fire Extinguisher, Applicable Fire Class A, B & C, EPDM Rubber Hose, NRV Valve and Helium Leak Detection Tested, Internal Coating - Epoxy Powder and External Pure Polyester Powder Coated (UV resistant), IS 15683:2006 Marked.				
2.1	ABC MAP-90% Powder Type 6 kg. capacity (IS 15683:2018)	No.	75		
3	Clean Agent Fluroketone (FK 5-1-12) Fire extinguisher, Including NRV Valve, High-Pressure Rubber Wire Braided Discharge Hose of not less than 10 mm dia. & complete in all respects including an initial fill. (Near Office Area, Art Storage Area, Art Galleries, Control Room / Server and LV Room, IT Room)				
3.1	Clean Agent (FK 5-1-12) Capacity 4 Kg (IS 15683:2018)	No.	10		
4	ISI marked Mechanical Foam Trolley type Fire Extinguisher, filled with AFFF Foam, Applicable Fire Class A & B, Controllable Discharge Mechanism, Fitted with EPDM Hose(Not Less than 3 Mtr) & Air Aspirated Nozzle, CO2 Gas Cartridge(IS-4947) of 300 Grams, External Pure polyester (UV Resistant) and Internal Epoxy Polyester Powder Coated, Brass Forged Cap, IS 16018:2012 Marked.				
4.1	Mechanical Foam Type 60 Lit. capacity-Trolley mounted (IS 16018:2012)	No.	4		
5	Supply & fixing of 4 nos. G.I. round bottom fire buckets of 9 liters capacity filled with sand including proper supporting / mounting arrangements in MS angle iron frame, painted by fire red color over two coats of red oxide paint and written with white paint "FIRE" complete in all respects as per the directions of Engineer-in-charge.	Set	10		
TOTAL CARRIED TO SUMMARY					
E ELECTRICAL PANEL FOR FIRE FIGHTING SYSTEM					

	Supply, installation, testing and commissioning of fire fighting panel suitable for 415 volts \pm 10% Volts, 3 phase, 4 wires, 50 HZ \pm 5% AC power distribution system. The panel shall be free standing floor mounting sheet metal enclosed dust and vermin proof conforming to IP-55, compartmentalized design, fabricated out of 2 mm thick sheet steel, painting, earthing numbering, danger plate as per specifications and drawings, flush front with Aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming and outgoing feeder breakers, fuses, indicating lamps etc shall be accommodated in a modular multitier arrangement. The painting shall done as per relevant IS codes/as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The panel shall be fabricated by TAC/Fire authority approved vendor and shop drawing should be got approved from the consultant before installation. The outgoing feeders inside the panel shall be connected through solid bus bars. Flexible cable links are not acceptable.				
	Bus bars shall be provided with heat shrinkable sleeves and shall be colour coded. The panels shall be suitable for cable entry from top/bottom. The panels shall be fabricated after the approval of fabrication drawings.				
Note	All wires and cables used will be FRLS. 2 Nos earthing terminals shall be provided for 3 phase, 415 volts \pm 10% Volts, 50 HZ \pm 5% AC supply system. M Lifting hooks shall also be provided in case of large panels. Cadmium plated hardware shall be used in fabrication of Panels.				
	All MCCBs/MPCBs & busbars shall be of xx KA breaking capacity. All the motor feeders/ switchgears shall be selected as per Type-2 coordination chart, IE-II motors. (suitable for motor duty application)				
	Provision for providing potential-free contacts for all pump starters should be included in the scope of the firefighting contractor.				
	Provision of auto start panel activated with pressure switch should be included in the scope of the firefighting contractor.				
1.1	Providing motor control centres fabricated from 1.6 / 2.0 mm thick M.S sheet with powder coated finish. The control panels should be comparable with H.P of the motor as specified.				
	<u>Fire Fighting Panel.</u>				
	Fabricating, supplying, installation, testing & commissioning of totally enclosed cubicle type fire pump control panel free standing, floor mounted, comparatmentalised, sectionalised, dust, dump and vermin proof with suitable natural ventilation arrangement, front and rear accessible, lockable power cum control panel, fabricated from 2.0 mm thick MS sheet (to give IP 55 protection) spray painted with approved colour shade, heavy 4 strip sleeved aluminium bus bar, bus bar supports, inter connecting from bus bars to out going switches/MCCBs including earthing the board suitable to accomodate the following including numbering etc. as required.				

	INCOMING:				
a)	400 amps TPN incoming MCCB complete with the following.				
i)	Power source of 400 amp M.C.C.B with rotary handle.				
ii)	Multifunction digital meter (Consisting of voltage, current, frequency, PF, KWH, KVA parameter) with RS 485 port. 1Set.				
iii)	3 Phase indicating lamps, instrument fuses and switches, 630 amp Aluminium Bus bar.				
	BUSBAR				
	1 Set of 500A TPN Aluminium Bus Bar with colour coded PVC Sleeves				
	OUTGOING				
a)	Two nos- 200 amps TP MCCB, 75 KW soft starters outgoing feeders to Hydrant and Sprinkler Pump motor . The compartment shall contain CT operated ammeter of 0-400 amps with auto/manual selector switch with fuse for 'ON'/OFF' trip status of motor.				
b)	Two no. - 40 amps TP TPN MCB, 5.5 KW star delta starter with preventer and outgoing feeder to Jockey Pump . The compartment shall contain CT operated ammeter of 0-63 amps with auto/manual selector switch with fuse for 'ON'/OFF' trip status of motor.				
c)	1 no- 63 amps TP MCCB, 18.5 KW soft starters outgoing feeders to water curtain Pump motor . The compartment shall contain CT operated ammeter of 0-100 amps with auto/manual selector switch with fuse for 'ON'/OFF' trip status of motor.				
d)	Spare				
	1 No - 200 amps TP MCCB.				
	1 No - 63 amps TP TPN MCB.				
	1 No - 40 amps TP MCCB.				
e)	2 set of Automatic Trip unit of suitable rating operating at 24V DC for Fully Automatic Diesel engine starting system complete with battery charger, 8 window annunciator, indicating lights, transformer, rectifier, timer, voltmeter ammeter, selector switches, push buttons, auxiliary relay etc complete as required as per NBC 2016.				
f)	All interconnecting power & control wires/cables of suitable size shall be extra.				
g)	(All for above from item (a) to (e) complete set). (The shop drawing to be prepared and approved before fabrication)	Set	1		
2	Supplying & laying of following 1.1 KV grade XLPE aluminium / copper conductor armoured cables having outer sheath of fire retardent extruded (FRLS) compound as per specification in cable tray, hume pipe, cable trenches over a bed of sand, clamped to wall with suitable clamps, saddles complete in all respects.				
a)	Power cable 3 core x 10 mm ² Copper (2XWY) (For Jockey pump)	RM	100		

b)	Power cable 3 core x 240 mm ² Aluminium (A2XFY) (For Hydrant & Sprinkler main Pump)	RM	100		
c)	Power cable 3 core x 95 mm ² Aluminium - each for (A2XFY) (For Hydrant & Sprinkler main Pump)	RM	100		
d)	Power cable 4 mm ² copper (2XWY) (For diesel pump)	RM	100		
e)	Power cable 3 core x 25 mm ² Aluminium (A2XFY) (For Water Curtain Pump)	RM	100		
3	Providing and fixing 32 mm x 6 mm GI strip in on surface (or) in recess for earth connection etc as required.	RM	200		
4	Supply and terminal joints for the following size of 1.1 KV XLPE insulated aluminium / copper conductor cable, including providing terminal lugs, crimping the joints effecting terminal connections to the equipment complete as required double compression gland complete in all respects.				
a)	Cable 3 core x 10 mm ² Aluminium	Nos.	2		
b)	Cable 4 mm ² coper	Nos.	8		
c)	Cable 3 core x 240 mm ² Aluminium	Nos.	2		
d)	Cable 3 core x 25 mm ² Aluminium	Nos.	4		
e)	Cable 3 core x 95 mm ² Aluminium	Nos.	4		
5	Fabrication and installation of following sizes of perforated MS cable tray including horizontal and vertical bends, reducers, tees, cross-members and other accessories as required duly suspended from the ceiling with MS Suspenders and including painting with post office red synthetic paint as required.				
a)	100 mm. (W)x50 mm.(D)x2.0 mm (T)	RM	40		
b)	150 mm. (W)x50 mm.(D)x2.0 mm (T)	RM	25		
c)	300 mm. (W)x 50 mm.(D)x2.0 mm (T)	RM	30		
6	Providing and fixing fire retardent / extinguishing electrical insulated synthetic mat of 3.0 mm thick ±10% conforming to IS : 15652-2006, IS : 8437 & IEC 61111 (2002-06) suitable for all voltages not exceeding 3.3 KV AC supply and having minimum width of 1000 mm ± 20 mm and including supply of required quantity of adhsvive / compound and fixing the same at site as per site requirement.	Sq.m.	3		
	TOTAL CARRIED TO SUMMARY				
F.	TOTAL GAS FLOODING SYSTEM FOR CRITICAL ROOM				

	Design, Supply, Installation, Testing and Commissioning of FM Approved & UL Listed Total Room Flooding System, FK 5-1-12 (Fluroketone) Gas shall be UL Listed. The system shall have a Working Pressure of 25/50 Bar. Complete Flooding System shall be FM Approved & UL Listed. Storage Cylinder shall be UL Listed & PESO Approved, The system also to be fitted with low pressure supervisory switch for monitoring cylinder pressure gauge with safety burst disc safety cap, elbow and other accessories, mounting bracket, container straps, NRV, Pressure operated control head which shall allow for pressure actuation of gas mounted, manually operated actuator to actuate the gas flooding process with the help of a lever or push button, Flexible Discharge Hose with Wire Braided Enforcement to route the Gas from the Storage Cylinder to the Discharge Piping, to be connected to the discharge outlet of gas cylinder valve & to be terminated at the system piping or discharge manifold, Flexible actuation hose complete as required. Designated to provide proper flow rate & distribution gas to flood the hazard area as per latest NFPA 2001.				
	List of Rooms UPS Room - 36 SQMT x 4.00 Metre (Height)				
1	34/40 Ltr Seamless Master Cylinder UL Listed & PESO Approved, Suitable to hold Agent at 25/50 bar, complete with Valve, Pressure Gauge, Syphon Tube and Safety Cap. Main + Standby	Nos	0		
2	80 Ltr Seamless Master Cylinder UL Listed & PESO Approved, Suitable to hold Agent at 25/50 bar, complete with Valve, Pressure Gauge, Syphon Tube and Safety Cap. Main + Standby	Nos	0		
3	120 Ltr Seamless Master Cylinder UL Listed & PESO Approved, Suitable to hold Agent at 25/50 bar, complete with Valve, Pressure Gauge, Syphon Tube and Safety Cap. Main + Standby	Nos	1		
4	140 Ltr Seamless Master Cylinder UL Listed & PESO Approved, Suitable to hold Agent at 25/50 bar, complete with Valve, Pressure Gauge, Syphon Tube and Safety Cap. Main + Standby	Nos	0		
5	FK 5-1-12 (Fluroketone) Gas UL Listed & FM Approved	KG	106		
c	Accessories for Master Cylinder: Electric Solenoid Actuator, Manual Release Device, Flexible Discharge Hose, Cylinder Strap, Low Pressure Switch, Caution Advisory Signage's & Discharge Pressure Switch	Set	1		
d	Discharge Nozzles-180/360 Degree	Nos	4		
e	Pipe ASTM A 106 Gr B Sch 40, along with threaded fittings of 3000# conforming to ANSI B 16.11 and including all necessary accessories.	Lot	1		
f	Fire Detection (Conventional Type) for Gas Suppression System: UL Listed Multisensor Smoke Detector + Base, Response Indicator, Microprocessor Based Gas Release cum Fire Alarm Control Panel, UL Listed Sounder cum Strobe, UL Listed Manual Abort Switch, UL Listed Manual Release Switch, UL Listed Manual Call Point, Armoured Loop Cable (2C x 1.5 Sq.mm) & Service Disconnection Switch & LED Display Sign Board Flashing with In-built Sounder "EVACUATE GAS RELEASED" & "DO NOT ENTER"	Lot	1		

g	Room Integrity Test for Room, test as per NFPA 2001 including all consumables. All rooms shall be properly sealed before room integrity test.	Lot	1		
h	Installation, Testing & Commissioning of System	Lot	1		
	TOTAL CARRIED TO SUMMARY				
G.	TUBE BASED GAS FLOODING SYSTEM FOR ELECTRICAL PANEL'S				
	Design, Supply, Installation, Testing and Commissioning of Automatic Direct Low Pressure Tube based Clean Agent Fluoroketone (FK 5-1-12) Panel Gas Suppression System, Gas shall be Zero ODP and GWP less than 1., Agent shall be UL Listed, the system shall be designed accordance to NFPA 2001 (Latest Edition), The Clean Agent Gas stored in PESO Approved Seamless Aluminium Alloy Cylinder and super-pressurized with Dry Nitrogen to 15 bar to 18 bar. Filling permission of FK 5-1-12 Gas shall be embossed and marked on PESO cylinder. UL Listed Pressure Switch and Pressure Gauge, same shall be integrated on DLP Valve itself to monitor the Cylinder Pressure. Multi-layered UL Listed Detection Tube shall be manufactured from specially processed polymer material to achieve the desired heat detection and delivery characteristics., and shall cover and routed to each compartment of panel, End Line Adapter with Pressure Gauge to be placed at the termination point of detection tube for charging the Dry Nitrogen., Pressure Switch should be integrated with Master Control Unit for Audio Visual Alarm in the event of Fire & System Discharge or in case of Low Pressure. Master Control Unit should have provision to Interface with main control fire alarm system.				
	List of Panel's MAIN LT PANEL - 12.00 x 1.6 x 2.4 Metre CAPACITOR PANEL - 2.00 x 0.6 x 2.0 Metre LIFT PANEL 1 - 2.0 x 0.4 x 2.4 Metre LIFT PANEL 2 - 2.5 x 0.4 x 2.4 Metre				
	Automatic DLP System with PESO Approved Seamless Aluminium Alloy Cylinder (Corrosion Free from agent) without any welding. Cylinder filled with FK 5-1-12 (Fluroketone) UL Listed Agent, Cylinder fitted with Automatic DLP Valve with Pressure Gauge, Pressure Switch along with switch point 5 Bars & End of Line Adapter with Pressure Gauge.				
1	2 Kg Clean Agent FK 5-1-12 (UL Listed Gas) filled in PESO Approved Seamless Aluminium Alloy Cylinder	Set	3		
2	4 Kg Clean Agent FK 5-1-12 (UL Listed Gas) filled in PESO Approved Seamless Aluminium Alloy Cylinder	Set	6		
3	UL Listed Multi-Layer Detection Tube – Fire Detection Tube for automatic fire detection and suppression system shall be UL Listed made by Special Modified Polyamide (PA), Color Red RAL300, High grade quality, Inner diameter 4mm, Outer Diameter 6 MM, pressurized with dry Nitrogen as per UL 521 - STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS.	Metre	245		

4	Master Control Unit – Master Control Panel should have in-built Audio / Visual Alarm with Battery BACKup, to integrate with Main Fire Alarm System, Potential Free NO, NC & COMMON ports should be provided. Complete Design shall be designed according to NFPA 2001 Standard and detailed calculation sheet with gas quantity should be submitted along with techno-commercial proposal.	Nos	9		
5	Installation & Commissioning Charges includes complete setup of the system, Installation of Cylinders on specially designed brackets, Laying of sensor tubes using tube attachments and Cable ties, fixing end of line plugs and end of line adapters, pressurizing tube @ 15 Bars using Nitrogen pressurizing agent.	Set	9		
6	P&F of 5 Kg Automatic Ceiling Mounted Type Modular Fire Extinguishers filled with Clean Agent UL Listed & FM Approved Fluoroketone (FK-5-1-12) Extinguishing Agent, Gas GWP-Global Warming Potential shall be less or equal to 1, Brass Forged Sprinkler Valves with Sprinkler with Glass Bulb 68 Degree Celsius, Discharge Ratio 95%, External Pure Polyester (UV Resistant) and Internal Epoxy Polyester Powder Coated, Modular Extinguisher shall be installed and mounted in uniform height vertically 2.0 metre above the risk, hanging provision should be on Tie Rods or MS Pipe. Ceiling Flange shall be supplied along with Fire Extinguishers. Maintenance & Care as per IS 2190:2010 Revision Fourth (Latest). For Electrical Rooms	Nos	12		
	TOTAL CARRIED TO SUMMARY				

<u>SUMMARY OF COSTS</u>		
S. No.	Description of Item	Amount (INR)
A.	FIRE FIGHTING EQUIPMENTS	
	Grand Total	
<u>OPERATION & MAINTENANCE</u>		
YEAR	OPERATION	ALL INCLUSIVE COMPREHENSIVE MAINTENANCE
DLP		Part of DLP
First Year after DLP		
Second Year after DLP		
Third Year after DLP		
Fourth Year after DLP		
Fifth Year after DLP		

Note:-

1. Above Prices will not be part of Tender Evaluation
2. It will not be binding on SWOSTI PREMIUM LTD for entering into above Comprehensive Annual Maintenance Contract
3. If SWOSTI PREMIUM LTD decides to enter into the above Comprehensive Annual Maintenance Contract, a separate Contract Agreement shall be made, which will not be part of this Contract
4. Tenderers are expected to quote Reasonable Prices.

PAYMENT TERMS:

Mobilization Advance:

- Contractor will be paid any mobilization advance as indicated in contract data.

PAYMENT SCHEDULE

The stage-wise payment to the Contractor shall be released based on the items of work executed as contained in the Bills of Quantities and rates agreed to thereto. Upon completion that item of work. Detail procedure are as below :

Preparation of R/A Bills :

- After satisfactory completion of each item of work, the bill shall be submitted with detailed measurements and invoice.
- Final bill along with no claim certificate should be submitted within 2 months from date of completion of work.
- Upon clearing the site of all debris, materials, temporary structures and machinery.
- Payments for supply/work done will be made in R/A bill based on monthly progress or work, verified with measurement by PMC/Authorised Engineer.
- R/A bills will be certified against final amounts as in contract.

Withholding of Payments:

- Payment may be withheld if contractor fails to meet contractual obligations.
- Failure to pay workers' wages or bills of contractor.

SECURED ADVANCE :

Any request for a secured advance may be requested for by Contractor along with invoice/ original shipping document copy of invoice and duly signed payment invoice. This may be considered by the Employer(Client) upon assessment by PMC/Engineer-in-Charge for items of non-perishable, non-fragile & non-consumable in nature and required for the work and in accordance with contract (Conditions & Technical Specifications), which have been brought to the site in connection with execution (having reference to an item of work in BOQ) and are adequately stored and/or protected against damage by weather or other causes and have not been incorporated in the work earlier. The amount of such advance shall be deducted from next/final payment. However, any secured advance for any material/equipment lying unutilized after 3 months/completion of work shall be recovered fully from the next/final bill.

Note:

Each payment shall be certified by the Engineer based on physical progress at site against the approved GFC drawings.

No advance payment shall be made unless specifically agreed in the contract data or special conditions.

All payments are subject to retention, tax deduction at source, and recoveries as per the contract.

SECTION 5: CONTRACT DATA, CONTRACT FORM

&

CONDITIONS OF CONTRACT

CONTRACT DATA

Clause	Description
1. Name of Work	Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam, – (Item Rate Contract)
2. Name of the Client	Swosti Group
3. Client's Representative	Project Management Consultant (PMC) – [Insert PMC Firm Name]
4. PMC Contact Details	Name: Designation: Project Manager – PMC Email: [Insert] Phone: [Insert]
5. Site Location	Gopalpur-on-Sea, Ganjam District, Odisha – 761002
6. Scope of Work	Supply, Installation, Testing & Commissioning of Fire Fighting System and Allied Works at Gopalpur Palm Resort for Swosti Premium Ltd., Gopalpur, Ganjam, as per drawings and specifications.
7. Estimated Contract Value	₹ [Insert Amount] (Inclusive of all costs except GST)
8. Tender Type	Item Rate-Fixed Price Contract
9. Contract Type	Item Rate
10. Time for Completion	[Insert duration – e.g., 6 months] from the date of Letter of Acceptance (LoA)
11. Date of Commencement	Within 7 (seven) days from issuance of LoA or handing over of site, whichever is later
12. Defects Liability Period (DLP)	12 months from the date of issuance of Completion Certificate
13. Performance Security	2% of Contract Value in the form of Bank Guarantee to be submitted within 7 days of LoA
14. Retention Money	3% of Running Account Bills; to be released after successful completion of the Defects Liability Period
15. Mobilisation Advance	No
16. Schedule of Payments	Item-based payments linked to actual progress of works (Refer to Section – Payment Terms)
17. Liquidated Damages (LD)	0.2 % per day of the value of balance work delayed beyond the stipulated date of completion , subject to a maximum of 10% of Contract Value
18. Arbitration	In accordance with the Arbitration and Conciliation Act, 1996; sole arbitrator to be mutually appointed
19. Governing Law and Jurisdiction	Laws of India; jurisdiction: Bhubaneswar, Odisha
20. Insurance	Contractor to provide insurance for Works, Workmen Compensation, Equipment, and Third-Party Liability to indemnify the Client from damage/Claims arising out all such items including loss arising out of natural calamity.
21. Taxes and Duties	Quoted price is inclusive of all taxes and duties except GST; GST shall be paid extra as applicable

Clause	Description
22. Sub-contracting	Permitted only with prior written approval of the Client / PMC
23. Safety & Compliance	Contractor to comply with safety regulations, labor laws, and site protocols
24. Force Majeure	As per General Conditions of Contract
25. Advance Payment	10% of Contract Value, against submission of Bank Guarantee of 100% of amount; recoverable in equal instalments from running bills
26. Secured Advance	To be considered on request

AGREEMENT

AN AGREEMENT is made this ----- BETWEEN the SWOSTI PREMIUM LTD ,Bhubaneswar, which expression shall include its successor, unless repugnant to or Excluded by the contract here of and assignees of and represented by its(the first party (hereinafter called the Authority) and by..... its sole proprietor/partners/Director and having registered office at (which expression shall be including his / its successor's heirs executors, representative and or assignees of the second party (hereinafter called the contractor}).

WHEREAS the Authority has, under tender Notification No. -----

WHEREAS the contractor has submitted tender for carrying out the work as above as per the tender document page ---- to ---- and has represented that in conformity with his / its obligation contained in the tender as modified by the correction slips and corrigendum contained he / it shall carryout the same truly, faithfully and honestly.

THE SAME has been accepted by both the parties on the terms and conditions, corrections, corrigendum contained in the tender as modified as well as the letter of acceptance , at a total Contract Price of Rs. Crores (Rupees Crores) excluding GST (To be paid extra as applicable) as Issued party No.1 annexed here to as.

The same shall be binding on both the parties.

IN WITNESS WHEREOF, the parties have signed the deed of agreement on the date, month and year referred to above.

Date: At

New Delhi.

Signed by

Party No.1 Party No.2

WITNESS

1. Party No.1

2. Party No.2

Conditions of Contract

GENERAL

Terms, which are defined in the Contract Data and not defined in the Conditions of Contract shall keep their defined meanings. Capital initials are used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities;

Compensation Events are those defined in Document;

The **Completion Date** is the date of completion of the Works as certified by the Engineer.

The **Contract** is the contract between the Client and the Contractor to execute, complete and maintain the Works.

The **Contract Data** defines the documents and other information, which comprise the Contract;

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Client [obligations of the Contractor mentioned in the Contract Data].;

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Client and includes Technical and Financial bids;

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract;

Days are calendar days; months are calendar months;

A **Defect** is any part of the Works not completed in accordance with the Contract;

The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date;

The **Client** is the party who will employ the Contractor to carry out the Works; [As mentioned in the Contract Data].

The Engineer is the person named in the Contract Data (or any other competent person appointed and notified to the contractor to act in replacement of the Engineer) who is responsible for supervising the Contractor's work, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, recommending extensions of time, and valuing the Compensation Events;

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works;

Initial Contract Price is the Contract Price listed in the Client's Letter of Acceptance;

Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Client by issuing an extension of time;

Materials are all supplies, including consumables, used by the contractor for incorporation in the Works;

Plant is any integral part of the Works, which is to have a mechanical, electrical, electronic or chemical or biological function;The **Site** is the area defined as such in the Contract Data;

Site Investigation Reports are those, which were included in the Bidding documents and are factual interpretative reports about the surface and sub-surface conditions at the site;

Specification means the Specification of the works included in the Contract and any modification or addition made or approved by the Client;

The **Start Date / Date of Commencement** is given in. the Contract Data. It is the date when the Contractor shall commence execution of the works. It does not necessarily coincide with any of the Site Possession Dates;

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site;

Temporary Works are works designed, constructed, installed, and removed by the Contractor, which are needed for construction or installation of the Works;

A **Variation or Change in Scope** is an instruction given by the Client, which varies and change the scope of Works;

Works are what the Contract requires the Contractor to construct, install, and turn over to the Client, as defined in the Contract Data;

Year may be understood as financial year;

“Approved Make” means makes of items as specified in the “List of Approved Makes/Approved Manufacturers” in this RFP. However, a higher or equivalent make can be utilized after obtaining prior approval of “Engineer-In-Charge” in writing.

Interpretation

In interpreting the Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their general meaning under the language of the Contract unless specifically defined. The Client will provide instructions clarifying queries about the Conditions of Contract.

If sectional completion is specified in the Contract Data, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion date for the whole of the Works).

The documents forming the Contract shall be interpreted in the following order of priority:

- (a) Agreement
- (b) Letter of Acceptance, notice to proceed with the works
- (c) Contractor's Bid

- (d) Contract Data
- (e) Conditions of Contract including Additional & Special Conditions of Contract
- (f) Specifications
- (g) Drawings
- (h) Bill of quantities (optional) and
- (i) Any other document listed in the Contract Data as forming part of the Contract.

Languages and Law

The language of the Contract and the law governing the Contract are stated in the Contract Data.

Engineer's Decisions:

Except where otherwise specifically stated, the Engineer will decide contractual matters between the Client and the Contractor in the role representing the Client as per the provision of the contract.

Delegation:

The Engineer may delegate any of his duties and responsibilities to other people after notifying the Contractor and may cancel any delegation after notifying the Contractor.

Communications:

Communications between parties which are referred to in the conditions are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act).

Sub-contracting:

The Contractor may sub-contract any portion of work, up to a limit of 10% of contract value, with the approval of the Engineer but may not assign the Contract without the approval of the Client in writing. Sub-contracting does not alter the Contractor's obligations.

Other Contractors:

The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Client between the dates given in the Schedule of other Contractors. The Contractor shall as refer to in the Contract Data, also provide facilities and services for them as described in the Schedule. The Client may modify the schedule of other contractors and shall notify the contractor of any such modification.

Personnel:

The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the Contract Data besides those as listed to carry out the functions stated in the Schedule or other personnel approved by the Engineer. The Engineer will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

If the Engineer asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating the reasons the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

Client's and Contractor's Risks:

The Client carries the risks which this Contract states are Client's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

Client's Risks:

The Client is responsible for the excepted risks which are in so far as they directly affect the execution of the Works in India, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive.

Contractor's Risks:

All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.

Insurance:

The Contractor shall provide, in the joint names of the Client and the Contractor, insurance cover **for the period as stated below against the events and** in the amounts and deductibles stated in the Contract Data for the following events, which are due to the Contractor's risks:

A) From the starting date to the end of defect liability period:

(a) Loss of or damage to the works

B) From the start date till completion of the work as per agreement:

(a) Loss of or damage to plant, materials and equipment,

(b) Loss of or damage of property (except the works, plant, materials and equipment) in connection with the contract, and

(c) Personal injury or death.

If all the items as listed above can be combined / grouped under one insurance cover like Contractor's, All Risks (CAR) Policy **covering all-natural calamities as per local conditions.**

Prior to seven days before the start date, the Contractor shall furnish to the Engineer notarized true copies of the certificates of insurance, copies of insurance policies and premia payment receipts in respect of such insurance for the Client's approval. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

If the contractor does not provide any of the policies and certificates required, the Client may affect the insurance which the contractor should have provided and recover the premiums the Client has paid from payments otherwise due to the contractor or, if no payment is due, the payment of the premiums shall be a debt due.

Alterations to the terms of insurance shall not be made without the approval of the Client.

Both parties shall comply with any conditions of the insurance policies.

Site Investigation Reports:

The Contractor, in preparing the Bid, may rely on any site Investigation Reports referred to in the Contract Data, which are indicative and not exhaustive. The Client shall provide all available details to the Contractor (Bidder) for his information, if requested by him at least one week prior to the bid submission date. The bidder shall be responsible for interpreting all such data. After award of work, the Contractor shall carry out detail survey and investigation for preparation of detail designs as per the scope of work and time period stipulated.

To the extent which was practicable (taking account of cost and time), the Contractor (Bidder) shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor (Bidder) shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- (a) the form and nature of the Site, including sub-surface conditions,
- (b) the climatic conditions,
- (c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- (d) the Laws, procedures and labour practices of the Country, and
- (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.
- (f) availability of required materials

Queries about the Contract Data:

The Client will clarify queries on the Contract Data if any during the Pre-bid references.

Contractor to Construct the Works:

The Contractor shall construct and install the Works in accordance with the approved specification and drawings. All designs, drawings and specifications to be furnished by the contractor shall be approved by the Client before execution.

The Works to be completed by the Intended Completion Date:

The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the Contractor, as updated with the approval of the Engineer, and complete them by the Intended Completion Date.

Approval by the Engineer:

The Contractor shall be provided Specifications and Drawings showing the proposed Temporary Works by the Engineer.

The Contractor shall be responsible for design of Temporary Works.

The Engineer's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

The Contractor shall be provided approved design, drawings and specifications of all components of the building and all allied infrastructure works, except those for the temporary works.

Safety:

The Contractor shall be responsible for the safety of all activities on the Site.

Possession of the Site:

The Client shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data the Client is deemed to have delayed the start of the relevant activities and this will be Compensation Event.

Access to the Site:

The Contractor shall allow the Client and any person authorized by the Client access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials or plant are being manufactured / fabricated / assembled for the works.

Instructions:

The Contractor shall carry out all instructions of the Engineer pertaining to works, which comply with the applicable laws where the Site is located.

The Contractor shall permit the Client to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Client, if so, required by the Client.

Disputes:

That for the purpose of jurisdiction in the event of disputes if any of the Contract would be deemed to have been entered in to within the State of Odisha and it is agreed that neither party to the Contract will be competent to bring a suit in regard to the matter by this Contract at any place outside the State of Odisha.

Procedure for Settlement of Disputes:

In case of Dispute or difference arising between the Client and the contractor relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled mutually.

TIME CONTROL

Programme:

Within **7 days of issue of letter of award**, the successful bidder shall submit to the Client detail work programme for approval showing the general methods, arrangements, order and timing for all the activities in the Works along with monthly cash flow forecast. The agreed work programme / milestones during such contract negotiation shall form part of the agreement.

An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.

The contractor shall submit to the Client, for approval, an updated Programme at intervals no longer than 15days. If the Contractor does not submit an updated Programme within this period, the Engineer may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue programme has been submitted.

The Client's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Client again at any time. A revised Programme is to show the effect of Variations and Compensation Events.

Extension of the Intended Completion Date:

The Client shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost.

The Client shall decide whether and by how much to extend the Intended Completion Date within 15 days of the Contractor asking the Engineer for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

The Engineer shall within 7 days of receiving full justification from the contractor for extension of Intended Completion Date refer to the Client his recommendation. The Client shall in not more than 15 days communicate to the Engineer the Client's decision.

Delays Ordered by the Engineer:

The Client may instruct the Contractor to delay the start or progress of any activity within the Works.

Management Meetings:

Either the Engineer or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

The Engineer shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Client. The responsibility of the parties for actions to be taken is to be decided by the Engineer either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

Early Warning:

The Contractor is to warn the Client/Engineer at the earliest opportunity of specific likely future events or circumstances that may adversely affect the work resulting delay in the execution. The Engineer may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Completion Date.

The Contractor shall cooperate with the Engineer in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer.

QUALITY CONTROL**Identifying Defects:**

The Engineer shall check the Contractor's work regularly and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer may instruct the Contractor to search for defects and to uncover and test any work that the Engineer considers may have a Defect

Tests:

If the Engineer instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect the test shall be a Compensation Event.

Correction of Defects:

The Engineer shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

Every time notice of a Defect is given; the Contractor shall correct the notified Defect within the length of time specified by the Engineer's notice.

Uncorrected Defects:

If the Contractor has not corrected a Defect within the time specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

COST CONTROL

Changes in the Quantities:(OPTIONAL)

Change of Scope (Variations) and Procedure for change of Scope:

The Client may, require the Contractor to make modifications/alterations to the works before the issue of the completion certificate either by giving an instruction or by requesting the contractor to submit a proposal for change of scope involving additional cost or reduction in cost. Any such change of scope shall be made and valued in accordance with the provisions of this contract and the contractor, in that event, will have no further claim on the ground that had it been known / disclosed earlier he would have made such charges in other connected work in their design, construction which would have saved him some cost and given him other consequential benefits.

Change in scope may include;

- (a) Change in specifications of any item of works
- (b) omission/ deletion of any item of work from the scope of work
- (c) any additional work (such as addition of extra plinth area) which are not included in the scope of work including any additional test on completion

In the event of the Client determining that a change of scope is necessary, it shall issue notice to the contractor a notice specifying in reasonable detail the works contemplated there under ("Change in scope notice")

Upon receipt of change in scope notice, the contractor shall with due diligence, provide to the Client through the Engineer within seven days time such information as is necessary together with documentation in support of;

- (a) the impact, of any, which the change in scope is likely to have on the completion of the work
- (b) the options for implementing the proposed change of scope and the effect, if any, each on the cost and time thereof including the following details;
 - i. break down of quantities, unit rates and cost for different items of work
 - ii. proposed design for the change of scope
 - iii. proposed modifications, if any, to the construction period with updated work programmes (all

Variations shall be included in updated programmes produced by the Contractor).

Any change in scope shall be calculated on the basis of the following priority:

The total value of all change of scope of work shall not exceed 10% of total contract price for the construction work.

Payments for Change of Scope (Variations):

The Client shall assess the change in scope proposal and Contractor's quotation at the time of bidding in financial form and upon reaching an agreement; the Client shall issue the Change of Scope Order requiring the contractor to proceed with the performance thereof.

If the Contractor's quotation is unreasonable, the Client may order the Variation and make a change to the Contract Price which shall be based on Client's own forecast of the effects of the Variation on the Contractor's costs.

If the Client decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event, subject to condition that such variation shall not exceed 10% of the total contract price for the contract work.

The Contractor shall not be entitled to additional payment for costs, which could have been avoided by giving early warning.

Payment Certificates:

The Contractor shall submit to the Engineer statements of the value of the work completed.

The Engineer shall check the Contractor's statement within 15 days and certify the amount to be paid to the Contractor as per contract payment schedule after taking into account any credit or - debit for the month in question in respect of materials for the works in the relevant amounts and under conditions set forth, including adjustment of advance.

The value of work executed shall be determined by the Engineer.

The value of work executed shall comprise the value of the quantities of the items as per the BoQ and work programme attached to the contract.

The value of work executed shall include the valuation of Change in Scope (Variation) and Compensation Events, if any.

The Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

Payments:

Payments shall be adjusted for deductions for retention, other recoveries in terms of the contract and taxes at source, as applicable under the law. The Engineer shall pay the Contractor the amounts as per the items of work executed and agreed rates thereto as well as payment schedule attached to the contract.

Tax:

The rates quoted by the Contractor shall be deemed to be exclusive of the GST and inclusive of Royalty, Income Tax, Labour CESS and all other statutory taxes that the Contractor will have to pay for the performance of this Contract. The Client will perform such duties in regard to the deduction of such taxes at source as per applicable law.

Currencies:

All payments shall be made-in Indian Rupees.

Retention:

The Client shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the works or settlement of final payment.

On completion of the whole of the works and issue of the completion certificate the performance security shall be repaid to the contractor. The retention amount shall be paid after the Defects Liability Period has passed and the Engineer has certified that all defects notified by the Engineer to the contractor before the end of the period have been corrected.

Liquidated Damages:

The Contractor shall pay liquidated damages to the Client at the rate as stated in the Contract Data that the Completion Date is later than the Intended Completion Date (for the whole of the works or the milestone as stated in the contract data). The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Client may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not relieve the contractor from his / her / their obligation to complete the works or from any other duties, obligations or responsibilities which he / she / they may have under the contract.

If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

Bonus Payment:

Deleted

Advance Payment:

The Client may make advance payment to the Contractor for mobilization and cash flow support of the amounts stated in the Contract Data by the date stated in the Contract Data, only against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a Bank acceptable to the Engineer in amounts and currencies equal to 110% of the advance payment.

The Advance Payment shall not be released until the camp setup, mobilisation of key personnel, equipment and labour at site.

The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the Contractor. The contractor shall ensure that the Bank Guarantee remain enforceable until the advance payment has been fully repaid and accordingly renew it, from time to time, until the advance payment has been fully repaid.

If the terms of guarantee specify its expiry date, and the advance payment has not been re-paid by the date then 28 days prior to the expiry date, the contractor shall extend the validity of the guarantee until the advance payment has been fully repaid.

The advance payment shall be repaid through percentage deductions from the interim payments as follows:

Securities:

The Performance Security shall be provided to the Client no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employee

The performance security shall be denominated in Indian Rupees. The Performance Security shall remain valid up to the period as defined in the Contract Data.

Cost of Repairs:

Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions including the situation as stipulated in the RFP.

FINISHING THE CONTRACT

Completion:

The Contractor shall request the Engineer to issue a Certificate of Completion of the Works and the Engineer will do so upon deciding that the Work is completed.

Taking Over:

The Client shall take over the Site and the Works within seven days of the Engineer issuing a certificate of Completion.

Final Account:

The Contractor shall supply to the Engineer a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer shall issue a Defect Liability Certificate and certify any final payment that is due to the Contractor within 30 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Client shall decide on the amount payable to the Contractor and issue a payment certificate, within 30 days of receiving the Contractor's revised account.

Termination:

The Client may terminate the Contract if the other party causes a fundamental breach of the Contract.

Fundamental breaches of Contract include, but shall not be limited to the following:

- (a) the Contractor stops work for 15 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Engineer;
- (b) the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (c) the Engineer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer;
- (d) the Contractor does not maintain a security which is required;
- (e) the Contractor has delayed the completion of works by the number of days for which the maximum number of liquidated damages can be paid as defined in the Contract data; and
- (f) if the Contractor, in the judgment of the Client has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition."

When either party to the Contract gives notice of a breach of contract to the Engineer for a cause other than those listed under Sub Clause 54.2 above, the Engineer shall decide whether the breach is fundamental or not.

Notwithstanding the above, the Client may terminate the Contract for convenience.

If the Contract is terminated the Contractor shall stop work immediately, make the Site safe and secure and leave the Site, as soon as reasonably possible.

Payment upon Termination:

If the-Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue a certificate for the value of the work done fewer advance payments received up to the date of the issue of the certificate, less other recoveries due in terms of the contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Client exceeds any payment due to the Contractor, the difference shall be a debt payable to the Client.

If the Contract is terminated at the Client's convenience, the Engineer shall issue a certificate for the value of the work done, less advance payments received up to the date of the certificate, less other recoveries due in terms of the contract and less taxes due to be deducted at source as per applicable law. No extra cost will be paid by the Client for expenditure towards removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works and the Contractor's costs of protecting and securing the Works.

Property:

All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Client, if the Contract is terminated because of a contractor's default.

Release from Performance:

If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Client or the Contractor, the Engineer shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which commitment was made.

ADDITIONAL CONDITIONS OF CONTRACT**1.WORK DESCRIPTION**

The work shall be strictly carried out as per the scope listed in this document and in accordance with the specifications. The equipment & material supplied at site will also be selected out of the list of approved makes. Bill of quantity provided with the document is for contractor guidance. It is expected that after award of work, contractor shall prepare shop drawings for approval by the Consultant & Client representative and also submit Technical documentation duly identifying shortlisted make of material/equipment along with its data sheets. Actual ordering shall be based on approved shop drawings & documents.

The work at site shall comply with the approved shop drawings and will meet the satisfaction of Client representative. The contractor shall be required to demonstrate satisfactory operation of entire system (including client supplied equipment installed by contractor) and furnish the required labour, material & tools to install & commission the system.

The broad scope of work for proposed HVAC system covered under this contract shall include supply, installation, testing & commissioning of the following:

Water cooled chiller (free supply)
Constant primary & Variable secondary Pumping system.
Smart Air handling units (AHU's).
FRP Cooling towers.
VFD's.
Dedicated outdoor air system including heat recovery wheel.
Mechanical ventilation systems.
Chilled, Condenser and Drain piping with associated fittings, valves etc.
Air distribution system.
Associated electrical works.
Kitchen ventilation.
Basement car parking ventilation.
Testing Adjusting & Balancing of the entire HVAC and mechanical ventilation installation.

Besides above, contractor shall also be required to undertake following:

Obtain fire approval from Local Authorities prior & post installation for operation of system by the land owner. Coordination for submission of required documents & demonstration of systems to obtain the Approval by the Contractor.
Minor civil works which include making openings in walls & slabs and making good of the same.
Commissioning of the plant including test reports to demonstrate satisfactory working prior to handing over.
Provide as-built drawings and handing over document comprising of list of recommended spares, catalogues and service schedule for each equipment/material.
Training of Client's staff.
Documents related LEED requirement

2.SITE MANAGEMENT

The Contractor shall be required to provide following staffing for the project:

Design Engineer who will work with Consultant for getting shop drawings, technical submittal and variation in quantity statement approved.

Procurement team.

Full time dedicated 1 manager (minimum 15 year experience) and Engineer (minimum 10 year experience) & one supervisor posted at site.

The contractor shall submit organization chart and CV prior to starting work at site.

The Contractor shall have required stores, tools & plant, security and facility to transport materials to place of installation for speedy execution of work.

3.REGULATIONS & PERMITS

Prior to starting work at site, the contractor shall obtain required permits/ licenses required for satisfactory execution and operation of the installation. All receipted amounts shall be reimbursed by Client on production of proof of payment by the contractor.

The executed work shall strictly confirm to applicable laws, regulations and Indian Standards which become applicable. In case the specifications and drawings contained in this document call for higher standard than those required by prevailing regulations, then these specifications & drawings shall become applicable. However, in case of any conflict or violation between the document/drawings and prevailing laws, then the applicable laws & regulations shall be governing & binding.

4.SHOP DRAWINGS

A set of design drawings listed in this document are available at Consultant office and may be issued with the tender document. These design drawings are for reference of the contractor and indicate proposed arrangement and the extent of work covered in the contract. The data given in the drawings and specifications is as exact as could be procured, but its accuracy is not guaranteed. The contractor cannot execute work or scale these drawings for reference.

Following shall be the procedure followed by contractor while preparation of shop drawings:

The contractor shall refer the design drawings for understanding the scope and proposed routes to be followed during execution.

Collate latest architectural backgrounds from the Client representative / Architect / Consultant.

Examine all related services drawings but not limited to structural, plumbing, electrical, HVAC, Interior, landscape and others including as-built works before starting the work. Any discrepancy must be report to the Client's site representative in writing and obtain approval for go-ahead.

Within one week of award of work, the Contractor shall prepare a list of shop drawing along with submission schedule for approval of Client representative/Consultant. The list of drawings must include layouts for Plant room, Pump room, Typical drawings showing exact location of supports, flanges, bends, tee connections, reducers, detailed piping drawings showing exact location and type of supports, valves, fittings etc; electrical panels inside/outside views, power and control wiring schematics, cable trays, supports and terminations.

Maximum headroom shall be maintained at all points and in case the same is inadequate, then written approval from Client representative must be obtained prior to execution at site.

These shop drawings shall depict information required to complete the Project as per specifications and as required by the Consultant/Client representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall contain tabulation of all measurable items of equipment/materials/works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings.

Where the work under this contract is proposed to be installed in close proximity or is interfering with other trades, then based on client representative/consultant directions, the contractor shall prepare all services coordinated working drawings and sections at a suitable scale (not less than 1:50), clearly showing proposed installed in relation to the work of other trades.

The contractor shall thereafter furnish 6 sets of detailed shop drawings to Client representative/Consultant for obtaining comments/approval. The Contractor will make unlimited number of re-submissions of shop drawings unless Client representative/Consultant/Architect approval is obtained.

The Contractor will thereafter submit 6 sets of final shop drawings to the Client representative for their exclusive use and all other agencies.

No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment/installation.

In case installation is carried out without following above process or obtaining a waiver to follow the procedure from Client representative, the work shall be rejected and contractor shall rectify the same at their own cost.

Shop drawings shall be submitted for approval minimum four weeks in advance of planned

delivery and installation of any material to allow Client representative/Consultant ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved program.

Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.

5. TECHNICAL DOCUMENTATION

The contractor prior to supplying material at site, will submit the following documentation to Consultant/Client representative for approval:

Manufacturers drawings, catalogues, pamphlets and other documents in triplicate. Each item shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.

Samples of all materials shall be submitted to the Client's site representative prior to procurement. These will be submitted in two sets for approval and retention by Client's representative and shall be kept in their site office for reference and verification till the completion of the Project. Wherever directed, a mockup or sample installation shall be carried out for approval before proceeding for further installation.

Where the contractor proposes to use an alternate make or model of equipment other than that specified, all new drawings and detailing required thereafter shall be prepared by the contractor at his own expense including any re-design required for other discipline/trade. Any delay on such account shall also be at the cost of and consequence of the Contractor.

Contractor to refer Annexure –II for list of approved makes & materials for this project.

6. VARIATION IN QUANTITY STATEMENT

After approval of major & relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement. This statement must be submitted prior to completing ordering of equipment and should identify imported/local materials in this contract as well as proposed spares/tools. The Consultant shall provide recommendation to Client representative for acceptance of anticipated variation in contract amounts and also advise Client to initiate action for procurement of spare parts and tools at the completion of project.

7. QUALITY ASSURANCE

The contractor to ensure that all materials and equipment supplied shall be new and of best available quality conforming to the relevant Indian Standard Specifications and to these specifications. Makes shall be strictly in conformity with list of approved manufacturers as per Annexure -II. Owners reserve the right to reject any item which in their assessment is second hand

Any deviations from above shall be clearly highlighted prior to supply and shall be brought to the notice of the Client representative/Consultant for further instructions in the matter.

Prior to starting execution work at site, the Contractor shall verify the sufficiency of the size of the shaft openings, clearances and ceiling spaces for proper installation. Failure to communicate insufficiency of any of the above, shall constitute Contractor acceptance of the same. The Contractor shall locate all equipment in fully accessible locations which can be easily serviced, operated or maintained. The exact location and size of access panels, required for each concealed, valve or other devices requiring attendance shall be finalized and communicated in sufficient time.

Failing this, the Contractor shall make all the necessary repairs and changes at own expense. Access panel shall be marked.

8. WORKS NOT COVERED UNDER THIS CONTRACT

Following works are excluded from the scope under this contract. These shall be executed by respective contractor in accordance with approved shop drawings where these details must be highlighted. However, contractor shall be responsible for providing details and thereafter supervision to ensure satisfactory & timely execution of these associated items as they have a bearing on this contract.

9. EXCLUDED FROM SCOPE OF WORK ASSOCIATED CIVIL WORKS

Following civil works associated with HVAC installation are excluded from the scope of this contract. These shall be executed by other agencies in accordance with approved shop drawings of and under direct supervision of the air conditioning contractor.

- i. RCC foundation for water chilling machine's pumps & centrifugal fans with angle iron frame work at the edges to protect these from damage.
- ii. RCC basin & supports & MS Joists for cooling towers.
- iii. PCC foundation blocks with angle iron frame work edging for all motor control center.
- iv. PCC foundation for pot strainers.
- v. PCC foundation blocks for all air handling units.
- vi. Air-tight fire doors with minimum one hour fire rating for plant room, AHU rooms, fan rooms and other equipment rooms.
- vii. Water proofing of floors of AHU rooms, air washer rooms and fan rooms.
- viii. Masonry drain channels and sumps with CI gratings in AC plant room including provision for sump pump and disposal.
- ix. Supply and fixing of G.I./wooden frame for mounting of grilles in masonry walls.
- x. Supply and fixing of GSS frame for mounting of grilles / diffusers in false ceiling / boxing.
- xi. Thermal insulation of terraces above air-conditioned areas exposed to sun.
- xii. Making of trenches and back filling the same after laying / pressure testing etc. of pipes.

ELECTRICAL SERVICES WORKS

All associated ELECTRICAL WORKS listed below are excluded from the scope of this contract. These shall be installed by other agencies in accordance with approved shop drawings of, and under direct supervision of the air conditioning contractor.

Providing power supply with earthing at the incoming of control panel in A/C plant room.

- ii. Providing power supply and earthing at the incoming MCCB in each air handling unit room.
- iii. Providing power and earthing at the incoming MCCB in each centrifugal fan panel and pump panel at locations called for on air conditioning Contractor's shop drawings.

iv. Providing 15 amps power outlet within 2 meter reach of each fan coil unit and VAV boxes at locations called for on air conditioning Contractor's shop drawings.

v. Providing 15 amps power outlet within 2 meter reach of each single phase propeller fan/inline fan at locations called for on air conditioning contractor's shop drawings.

vi. Providing wiring and earthing for sump pumps in air conditioning plant room.

PLUMBING SERVICES WORKS

All associated PLUMBING WORKS listed below are excluded from the scope of this contract. These shall be installed by other agencies, in accordance with approved shop drawings of, and under direct supervision, of the air conditioning contractor.

Providing soft water (Commercial hardness 0 ppm and PH 7+1) at air washers, humidifiers and at chilled water expansion tank.

Providing make up water for cooling tower as per RO water quality

iii. Disposal of condensate drain from fan coil units / ceiling suspended units beyond the condensate drain riser.

Providing sump pumps and necessary piping for drainage of air conditioning plant room and other machine rooms located below ground level.

Providing floor drains in cooling tower area and in air handling unit rooms.

Note : Preparation of shop drawings defining the Foundation details to civil contractor will be under HVAC Contractor scope of work.

10. INTEGRATION WITH BUILDING AUTOMATION SYSTEM

The scope shall include providing following for the interface to Building Automation System.

Sockets /Nipples including shut-off valve for mounting sensors/transmitters on pipe lines.

Space in electrical panel for running of LV cables.

CT of 15 VA burden with potential free taps.

Auto/manual changeover switch with potential free contact at manual position.

Installation of motorized control valves with provision of counter flanges

Installation of current transformer & Transducer along with wiring between Current Transformer & Transducer up to the terminal block

Provision for mounting BAS sensors.

15 Amps. Power supply with MCB in all AHU panels and 32 Amps MCB on HVAC plant room panel for power supply to DDC Panel.

It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements lies solely with the contractor.

11. TESTING, ADJUSTING AND BALANCING

Air and water balancing shall be carried out by the contractor through a specialist team (different than erection team) as per Specifications and ASHRAE Guidelines. Performance test shall consist of three days of 10 hour each operation of system for each season. The results for each season shall be submitted to Client representative/Consultant. The submittal shall include operational parameters marked on performance curves for each equipment along with test certificates and safety/control settings.

The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Client's site representative. All tests shall be carried out in the presence of the

representatives of the Construction Manager/Architect /Consultant and Client's site representative. After commissioning, the results shall be submitted for scrutiny in quadruplicate.

All equipment installation shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Client's site representative. In case of rotating machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Contractor at his own expense. The contractor shall guarantee that the equipment installed shall maintain the specified Noise Control levels.

12. COMPLETION CERTIFICATE

On completion of the installation, a certificate shall be furnished by the contractor, counter signed by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local authority engineer in-charge.

The contractor shall be responsible for getting the entire installation duly approved by the local authorities Engineer in Charge concerned, and shall bear expenses if any, in connection with the same.

13. AS-BUILT DRAWINGS

Contractor shall submit following as-built drawings as and when work is completed:

6 set of hard copies of all as-built drawings duly corrected and incorporating any modifications during execution.

Two set of pen drive containing the drawings.

The drawings shall provide plant room layouts, piping layouts, location of all concealed accessories/piping, wiring diagram, control diagram, Single line diagram, control schematic with detailed bill of materials, showing makes, types & description of all components & accessories and sequencing of automatic controls and other services.

14. MAINTENANCE MANUAL

Upon completion and commissioning of works, the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and Client's site representative and two for Clients Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment. The manuals shall include:

- i. Description of the work carried out / installed.
- ii. Operating instructions.
- iii. Maintenance instructions including procedures for preventive maintenance.
- iv. Manufacturers catalogues.
- v. Spare parts list.
- vi. Trouble shooting charts.
- vii. Drawings
- viii. Type and routine test certificates of major items.

Details of all the bought out item should be part of this maintenance manual.

15. ON SITE TRAINING

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labor

and helpers for operating the entire installation for such periods so as to enable the Client's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Client's personnel in the operation, adjustment and maintenance of all equipment installed.

16. DEFECTS LIABILITY PERIOD

Complaints

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 10 hours of receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

Repairs

All equipment that requires repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Client.

17. UPTIME GUARANTEE

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall and no reimbursement shall be made for the extended period.

18. OPERATION & MAINTENANCE CONTRACT

Contractor may be required to carry out the operation of the installation during and after the defects liability period. Further, it may also be required to carry out all-inclusive maintenance of the entire system for a period of four years beyond the defects liability period.

Operation Contract:

It will involve round the clock operation for 24 hours a day wherein work will include but not limited to operation of installation, maintaining log books, complain register and summary of operation.

The terms of payment shall be monthly at the end of each month on pro-rata basis.

All Inclusive Maintenance Contract:

The work will involve routine preventive maintenance with monthly status report. Entire installation shall be painted every two years. 98% uptime of all systems is expected under this contract wherein up time shall be assessed every month and in case of shortfall during any month the contract shall be extended by a month. No reimbursement shall be payable for the extended period.

Adequate number of persons to the satisfaction of the Client representative shall be provided including relievers wherein statutory compliances such as of EPF, ESIC and other applicable labour legislations shall be to contractor account. No overtime shall be payable. Routine shut downs shall be permitted with prior permission of the Owner.

Payment shall be Quarterly at the beginning of each quarter on pro-rata basis.

19 BIM Implementation

It is expected that Contractor, if required shall prepare all shop drawings in latest version of Revit

only and coordinate with other contractors to provide a clash free model. Thereafter, all shop drawings shall be provided in PDF, 2D CAD plans and critical sections in 3D. The drawings shall be submitted in hard copy in A0/A1 size at 1:100 scale including all annotations, heights, bottom of duct/pipe/tray etc complete in all respect as required.

20. GREEN BUILDING COMPLIANCE

Actions required by Contractor:

Contractor will provide full support in complying to Green Building requirements for the desired level of Green Building Rating in the project.

Contractor shall implement the recommendations provided by Green Building Consultant and provide support during the site inspections.

Contractor shall provide respective documentation including but not limited to specification sheets, manufacturer cutsheets, Test Certificates, Brochures, purchase records, manufacturer declarations, calculations, site photographs, commissioning reports.

Contractor is encouraged to designate an individual in their existing team who will be responsible for regular coordination with respective site people to ensure implementation of required green building measures and ultimately provide the required documentation for aspired Green Building Rating.

In case of any deviations in implementing recommended green building measures and/ or using specified material/ equipment/ system, contractor will have to inform Owners/ Services Consultant/ Green Building Consultant/ Architect as applicable for their formal approval.

In case of any additional requirement to comply with Green Building rating as identified during construction/ installation/ commissioning based on the actual site conditions/ construction activities, Contractor shall implement

21 PERFORMANCE GUARANTEE

The contractor shall carry out the work in accordance with the Approved shop drawings, Specifications, Schedule of Quantities and other documents forming part of the Contract. Contractor shall carry out heat load calculation, Ventilation calculation & Smoke calculation & submit the same for client / consultants approvals. The contractor shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required end result.

The contractor shall guarantee that the HVAC system as installed shall maintain the inside conditions in the air-conditioned spaces as described under “Basis of Design” in the specifications.

Complete set of architectural drawings is available in the Architect/Consultant’s office and reference may be made to same for any details or information. The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

LABOUR:

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Engineer, deliver to the Engineer a return in detail, in such form and at such intervals as the Engineer may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer may require.

COMPLIANCE WITH LABOUR REGULATIONS:

During continuance of the contract, the Contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State or Central Government or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the State or the Central Government or the local authority. Salient features of some of the major labour laws that are applicable to the construction industry are given below. The Contractor shall keep the Client indemnified in case any action is taken against the Client by the competent authority on account of contravention of any of the provisions of any Act or rules made there under, regulations or notifications including amendments. If the Client is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provisions stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the Contractor, the Engineer/Client shall have the right to deduct any money due to the Contractor including his amount of performance security. The Client/Engineer shall also have right to recover from the Contractor any sum required or estimated to be required for making good the loss or damage suffered by the Client.

The employees of the Contractor and the Sub-Contractor in no case shall be treated as the employees of the Client at any point of time.

SPECIAL CONDITIONS OF CONTRACT

SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN BUILDING AND OTHER CONSTRUCTION WORK.

- a) **Workmen Compensation Act 1923:** - The Act provides for compensation in case of injury by accident arising out of and during the course of employment.
- b) **Payment of Gratuity Act 1972:** Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years service or more or on death the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.

- c) Employees P.F. and Miscellaneous Provision Act 1952: - The Act Provides for monthly contributions by the Client plus workers @ 10% or 8.33%. The benefits payable under the Act are:
 - (i) Pension or family pension on retirement or death, as the case may be.
 - (ii) Deposit linked insurance on the death in harness of the worker.
 - (iii) Payment of P.F. accumulation on retirement/death etc.
- d) Maternity Benefit Act 1951: -The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.
- e) Contract Labour (Regulation & Abolition) Act 1970: - The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Client by Law. The Principal Client is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Client if they employ 20 or more contract labour.
- f) The Code on Wages, 2019: This code consolidates the Laws relating to Wages and Bonus and matters connected therewith or incidental thereto.
- g) Industrial Disputes Act 1947: - The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- h) Industrial Employment (Standing Orders) Act 1946: - It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Client on matters provided in the Act and get the same certified by the designated Authority.
- i) Trade Unions Act 1926: - The Act lays down the procedure for registration of trade unions of workmen and Clients. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- j) Child Labour (Prohibition & Regulation) Act 1986: - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in Building and Construction Industry.

- k) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: - The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter- State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home up to the establishment and back, etc.

- l) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996: - All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the Government. The Client of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First-Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Client to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

- m) Factories Act 1948: -The Act lays down the procedure for approval at plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

SPECIAL CONDITIONS

1.It must be understood that the work has to be completed as per the time provided in the contract and as such time is the essence of the contract.

2.The quantities furnished in the bills of quantities are only probable quantities liable to alternation by omission, deduction or addition, and it would be clearly understood that the contract is not a lump sum contract and the SWOSTI PREMIUM LTD do not, in any way, assure the tenderer or guarantee that the said probable quantities are correct or that the work would correspond thereto. Payments will be regulated on the actual quantities of work authorizedly done and measured at the accepted rates. No claims due to change in quantities (+ or -) will be entertained. The drawings, forming parts of complementary installations work specifications and the bills of quantities, of the contract, are explanatory of and are to one another, representing together the works / to be carried out. If neither the drawings nor the specifications nor the accepted bills of quantities include any part/parts the intention to include which is nevertheless clearly inferred and which are obviously necessary for the proper completion of the works/ installations, all such parts shall be supplied and executed by the contractor at no extra charge. Anything contained in one or another of (a) the drawings, (b) the specifications and (c) the accepted bills of quantities and not found in the others will be equally binding as if it were contained in each of them.

3.No alterations, that might have been made by the tenderer in the drawings, specifications, conditions or probable quantities accompanying this notice will be recognized and if any such alterations are made the tender, will be invalid. Conditional tenders will however be liable for rejection.

4.The tenderer must obtain for himself on his own responsibility and at his own expense all the information necessary, including risks, contingencies and other circumstances to enable him to make a proper tender and to enter into a contract with the SWOSTI PREMIUM LTD . He must examine the drawings, specifications, conditions and so on and must inspect the site of work, examine the nature of the ground and the subsoil (so far as is practicable) and acquaint himself with local conditions, means of access to the work, storage facilities or areas for staff colony, the nature of the work, in fact all matters pertaining thereto before he submits his tender.

5.The tender accepted shall not be entitled to make any claim for increase in the rates quoted and accepted excepting in pursuance of any specific provision in the contract.

6.Only approved agencies/ skilled workers shall be deployed to carry out requisite specialized items of work. The Officer/ Engineer in charge's decision in consultation with Architect's/ in this regard shall be binding to all the parties concerned.

7. The rates shall be firm and not be subject to any variations in exchange rates, in taxes, duties etc. in railway freight and the like including labour conditions, etc. The rates are not subject to escalation.

8.It will be the sole responsibility of the contractor to procure all the equipments/ materials and other materials required for the work.

9.The SWOSTI PREMIUM LTD further reserves the right to delete or reduce at any time, any section of the bills of quantities with out assigning any reasons whatsoever there for and no claim will be entertained in this regard.

10.The tenderer whose tender is accepted is bound to execute formal agreement with the SWOSTI PREMIUM LTD within one week of the date of intimation of award of work in

accordance with the draft agreement which will include conditions of tender, form of tender (general conditions of contract & Special Condition of Contract), Articles of Agreement, Bills of quantities, Conditions of contract, Special conditions if any, the drawings and specifications, but his liability under the contract shall commence from the date of written order to commence work whether the formal agreement is drawn or not.

The Contractor shall bear all expenses in connection with the execution of the said agreement including fees for stamping and registration of documents as required.

11. The Security Deposit will bear no interest whatsoever until the date of release.

12.

(a) The contractor, upon award of work, shall submit a memorandum of procedure giving the outline of his general scheme, programme and time table, in the form of a chart that shall be scrutinized and approved (with modifications as necessary), which shall become the approved programme for execution. The approved programme shall be the basis for assessment of comparative progress under the relevant conditions of contract.

(b). Over and above, the contractor has to supply programme chalked out showing important milestones to be achieved and the progress actually achieved compared with, the target of the same in the programme and shortfall, if any planned for being made up in the programme for next month.

13. The work in general shall conform to the Specifications provided.

(a) In case items not covered by the general specifications referred above, reference shall be made to the appropriate I.S. Code.

(b) Should there be any difference in the particular specifications of individual item of work and the description of item as given in the Schedule of quantity, the latter shall prevail, which will be as per the relevant drawing.

(c) In case of any work for which there is no specification in I.S. specifications or in the specifications forming part of tender documents or in case there is any variation, such work shall be carried out in all respects in accordance with the instructions to be issued by the Engineer in charge.

14. The work of any part of it shall not be transferred, assigned or sublet without the written consent of the SWOSTI PREMIUM LTD .

15. The Contractor shall be required to co-operate and work in co-ordination with and afford reasonable facilities for such other agencies / specialists / interior designers/ consultants as may be employed by the Architects / Project Management Consultant/ Officer in Charge on other works / sub-works in connection with the project/scheme of which this work forms a part.

16. The Contractor shall get the necessary insurance done for their personal employed/ Swosti Premium Ltd third party insurance in name of G.M(B D), Swosti Premium Ltd and for all other risk insurance or any other insurance as required.

17. The Contractor shall make arrangements of carrying water and electricity .

18. The Contractor is required to comply with all Acts of Government relating to labour, safety, environment and other Rules and Regulations made there under from time to time

and to submit at the proper times all particulars and statements required to be furnished to the appropriate Authorities.

19. Contractor shall not in any way interrupt or do any act, matter or thing to prevent 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 Work shall be completed or as soon thereafter as convenient the Architect 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 a period of 14 days after receipt thereof by him, Owner shall sell the same, and shall give credit to the Contractor for the amount realized. The Architect shall thereafter ascertain and certify in writing what (if anything) shall be due or payable to or by the Owner for the value of the said plant and materials so taken possession of by the Owner and 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 Architect shall be final and conclusive between the parties.

20. If at any time after the commencement of the work the Owner shall for any reason whatsoever not require the whole thereof, as specified in the tender, to be carried out, but need to abridge the Contract, the Owner shall give notice in writing of the fact to the Contractor who shall have no claim to any payment or compensation which he might have derived from the execution of the work in full, but which he did not derive in consequence of the whole amount of the work not having been carried out. The Contractor shall in this case, however, be entitled to payment for the work already executed by him in accordance with the agreed rates. The Owner shall also take over all building materials as might have been ordered for the work, but orders for which cannot be canceled, if delivered within a reasonable time, and shall pay for them at cost price. The Contractor shall also be allowed to remove his tools and plants from the site.

Contractor Responsibility Matrix

Work Element / Activity	Contractor	Client (Swosti)	PMC (You)	Architect / Consultants
1. Mobilisation & Site Establishment	R	A	C	-
2. Setting Out and Site Survey	R	C	C	C
3. Site Safety & Housekeeping	R	C	C	-
4. Approvals from Local Authorities (as applicable)	C	A	R	C
5. Scaffolding, Centering, and Shuttering	R	I	C	-
6. Quality Control & Testing	R	I	C	C
7. Coordination with MEP teams	C	I	C	C
8. Materials Procurement (Cement, Steel, Bricks, etc.)	R	I	C	-
9. Submission of Progress Reports & MIS	R	I	A	-
10. Adherence to Timeline / Work Schedule	R	I	C	-
11. Rectification of Defects During DLP	R	A	C	-
11. Final Handover & Completion Report	R	A	C	-

Legend:

- **R = Responsible** – Main executor.
- **A = Accountable** – Final decision-maker or owner.
- **C = Consultative** – Provides input and coordination.
- **I = Informed** – Kept in the loop, but not involved in execution.

Management Meetings

- Either the Engineer or the Contractor may call for a management meeting.
- These meetings are held to review progress plans and handle issues flagged under the early warning system.
- The Engineer shall record meeting proceedings and circulate to attendees and the Client.
- Action items shall be assigned and communicated in writing.

Quality Control

- The Engineer shall regularly inspect the Contractor's work and identify any defects. Instructions may be issued to uncover or test work suspected to be defective.
- **Tests** If the Engineer instructs tests not specified in the specifications, and the work is found defective, the Contractor shall bear the cost of tests. If no defect is found, it will be treated as a Compensation Event.

Payments & Liquidated Damages Payments

- Payments shall be adjusted for deductions for retention, other recoveries in terms of the contract and taxes at source, as applicable under the law.
- The Engineer shall pay the Contractor the amounts as per the payment schedule attached to the contract.

Retention

- The performance security obtained at the time of signing of contract shall be retained till successful conclusion of project completion and issue of completion certificate.
- The Client shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the works or settlement of final payment.
- On completion of the whole of the works half the total amount retained is repaid to the contractor and half when the Defects Liability Period has passed, and the Engineer has certified that all defects notified by the Engineer to the contractor before the end of the period have been corrected.

Milestone

Milestone No.	To be Achieved	Timeline
Milestone 1-	60 % of value of contract	Upto 120 Days
Milestone 2-	100 % of value of contract	Upto 180 Days

Liquidated Damages

- The Contractor shall pay liquidated damages to the Client at the rate 0.2%/day on the value of balance work beyond stipulated date of completion as per following milestones of execution subject to a maximum of 10% of contract value.
 - a) Up to end of 120 days of signing of contract – 60 % of value of contract
 - b) Up to end of 180 days of signing of contract –100 % of value of contract