

Appointment of consultant

No.FC/42-5/11-12(P)
GOVERNMENT OF INDIA
MINISTRY OF HOME AFFAIRS
NATIONAL FIRE SERVICE COLLEGE
Civil Lines, Palm Road, **NAGPUR-440 001.**
Phone: 0712-256 5074, 256 0476, 256 0179 , Telefax-0712-256 0075
www.nfscnagpur.nic.in, E-mail- nfscnagpur-mha@nic.in

NOTICE INVITING GLOBAL TENDER FOR APPOINTMENT OF CONSULTANT FOR COMPREHENSIVE PLANNING AND DESIGN OF FIELD TRAINING MODULES

1. **Name of Work:** The Director, National Fire Service College, Nagpur, on behalf of President of India, invites Global tender for appointment of consultant for comprehensive planning, design and supervision of construction, installation and commissioning of field training module for rescue & fire fighting, and preparation of training courses on each modules and designing of course content for 31 proposed courses.
2. **Bid system:** The tender is invited in two bid pattern (technical and commercial) at global level.
3. **Brief of Work:** The Government of India has approved a scheme for upgradation of National Fire Service College, Nagpur, at an estimated cost of Rs. 205 crore for the period 2010-11 to 2012-13. The main components of the Scheme are Construction of Residential & Non-residential Buildings and procurement of training aids, laboratory & other modern equipments necessary for emergency response training and demonstration activities. The construction work will be carried out by Central Public Works Department, G.O.I., in two parts. i.e. Part – A, consisting of construction of Non-Technical buildings such as Administrative Block, Academic Block, Library Block, Laboratory Block, Hostel & Guest House, Fire Station, Workshop, Stores, Garages, Drill Ground, Gymnasium & Residential buildings and Part – B consisting of construction of Technical buildings including specialized facilities such as Multiple Non-Industrial Occupancy, Multiple Industrial Occupancy, Urban Search and Rescue facilities, Hydro-Carbon and Hazmat facilities, Aircraft rescue and fire fighting, Crushed Car and Rail Coach facilities etc. The consultant is required for the aforesaid Part – B work as per the scope of work.
4. **SCOPE OF WORK**

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The consultant will be required to assist Director, NFSC and other executing agencies in upgrading the new campus of the College at par with international standards for the technical buildings.

The scope of work includes –

- Comprehensive Design of Field training Modules of Multiple Non-Industrial Occupancy, Multiple Industrial Occupancy, Urban Search and Rescue facilities, Hydro-Carbon and Hazmat facilities, Aircraft Fire and Rescue Facilities, Crushed Car and Rail Coach facilities.
- To work out Specifications of construction materials, B.O.Q. and cost estimates.
- To prepare the tender document and evaluation of offer.
- Supervision of Construction work of field training modules.
- To prepare the list of Equipments and Appliances required for above facilities and their specifications, B.O.Q., cost and source of availability.
- To supervise Installation and Commissioning of above facilities.
- Preparation of Standard operating Procedures, Maintenance Schedule, and other documentation.
- Preparation of training syllabus, schedule for 31 proposed courses and courses on training modules.
- Training to Trainers on above modules.
- Evaluation of first training batch.
- Assessment of Recurring cost of each training module.
- Third Party certification for facilities and training courses.
- To review the specifications of equipments and appliances proposed for procurement by Director, NFSC for utilization in the upgraded NFSC.

5. Qualifying Requirements:

- Experience in the field of design, installation and commissioning of Fire & Rescue Training Module and Simulators of international Standards.
 - Turnover of the Firm should have been at least US \$ 2,128,000 or Rs. Ten crores/year for the last three years.
 - Five Years of Project Experience in the field of Fire & Rescue Training Modules and Simulators.
 - Completed at least two such Projects at International Level.
6. The applications of the consultants will be short listed on the basis of their qualification, past experiences and methodology proposed for executing the work, financial

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requirements and adequacy to undertake the assignment. The participating consultants in tender may be asked to make presentation about the credentials and methodologies suggested for undertaking the work.

7. **Tender Document:** Interested bidders are requested to download Tender Document form from our website nfscnagpur.nic.in and submit their completed Tender documents along with Demand Draft for Rs.5,000/- (Rupees Five Thousand only) in f/o Director, National Fire Service College, Nagpur **within 60 days** from date of publication. **Address :** Director, National Fire Service College, Civil Lines, Palm Road, Near G.P.O., Nagpur.
8. **Pre-Bid Meeting:** A meeting shall be organized. The date of meeting shall be intimated to the prospective Consultant/Firm for briefing about project and clarifications of queries of Firms.
9. **Bid Opening:** Technical bid shall be opened at 3.00 p.m. on the 60th day from the date of publication, and date of financial bid opening will be intimated to shortlisted consultant/firms. Both bids shall be opened in the presence of technical committee and the bidder's representatives.
10. **Earnest Money Deposit:** The bidder shall submit 2% of financial quote in the form of DD as an earnest money in f/o Director, National Fire Service College, Nagpur.
11. **Other details:** Any information / query related to project may be sent to the address of undersigned, ten days prior to pre-bid meeting. Tender received after the last date of submission shall not be considered. NFSC shall not be responsible for any delay in submission including delay due to postal or any other reason, whatsoever.
12. This office reserves the right to reject the request for issuing the Tender Document to any bidder without assigning any reason.

DIRECTOR
N.F.S.C., Nagpur

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GOVERNMENT OF INDIA

MINISTRY OF HOME AFFAIRS

NATIONAL FIRE SERVICE COLLEGE

Civil Lines, Palm Road, NAGPUR-440 001.

Phone: 0712-256 5074, 256 0476, 256 0179 , Telefax-0712-256 0075

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GLOBAL TENDER

For

Appointment of consultant for comprehensive planning, design and supervision of construction, installation and commissioning of **“Field Training Modules for Rescue & Fire Fighting and Emergency Services and preparation of training courses on each modules and designing of course contents for 31 proposed courses”**

R.F.P. NO. FC/42-5/11-12(p)

April 2011



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GOVERNMENT OF INDIA

MINISTRY OF HOME AFFAIRS

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SECTION 1: LETTER OF INVITATION

Letter Number: NO. R.F.P. NO. FC/42-5/11-12(p)

Dated:

To,

Name & Address of the Firm

Dear Sir,

1. Director, National Fire Service, Nagpur, Ministry of Home Affairs (MHA), Government of India, invites Proposals to provide the Consultancy Services for comprehensive planning, design and supervision of construction, installation and commissioning of **“Field Training Modules for Rescue & Fire Fighting and Emergency Services and preparation of training courses on each modules and designing of course contents for 31 proposed courses”**

2. Ministry of Home Affairs (MHA), Government of India, is upgrading a new state of the art National Fire Service College campus at Nagpur. The sole objective to train the fire & emergency service personnel to groom them to react to all incidents regardless of their size and nature in orderly manner and to be capable of managing the safety and perform with excellence to the expectations of the society. The changed scenario calls for a re-look on the training and education policy that is primarily used on the recommendations made by the expert committee constituted by the MHA way back in 1952. In this backdrop it is proposed to develop training and education supported by applied research facilities at proposed NFSC campus that commensurate the today `s need.

Further details are provided in the attached Terms of Reference.

3. The RFP includes the following documents:

Section 1 - Letter of Invitation

Section 2 - Information to the Consultants

Section 3 - Data Sheet

Section 4 - Technical Proposal - Standard Forms

Section 5 - Financial Proposal - Standard Forms

Section 6 - Terms of Reference

Section 7 - Standard Form of Contract

4. You are requested to acknowledge receipt of this letter of invitation either

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electronically or through hard copy at the Client address given in **Data Sheet**.

Yours faithfully,
sd
DIRECTOR
N.F.S.C., Nagpur

SECTION 2: INFORMATION TO THE CONSULTANTS

Introduction

- 1.1 The Client named in the **Data Sheet** will select a consulting firm/organization (the Consultant) from those listed in the Letter of Invitation, in accordance with the method of selection specified in the **Data Sheet**.
- 1.2 The interested Consultants are invited to submit a Technical Proposal and a Financial Proposal, as specified in the **Data Sheet**, for consulting services required for the assignment named in the **Data Sheet**. The Proposal will be the basis for contract negotiations and ultimately for a signed Contract with the selected Consultants.
- 1.3 Consultants should familiarize themselves with fire fighting and rescue arrangements in the Country, local conditions relevant to the Services and take them into account in preparing their proposals. To obtain first-hand information on the assignment and local conditions, Consultants are encouraged to visit the Client before submitting a proposal and to attend a Pre-Bid meeting which is specified in the **Data Sheet**. Attending the Pre-Bid meeting is optional. Consultants should contact the Client's representative named in the **Data Sheet** to arrange for their visit or to obtain additional information on the Pre-Bid meeting.
- 1.4 The Client shall provide the inputs specified in **Data Sheet** and make available relevant project data and reports, if any.
- 1.5 Consultants shall bear all costs associated with the preparation and submission of their proposals and contract negotiation. The Client is not bound

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to accept any proposal, and reserves the right to annul the selection process at any time prior to Contract award, without thereby incurring any liability to the Consultants.

Conflict of Interest

- 1.6 The Client considers a conflict of interest to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations. The Client will take appropriate actions to manage such conflicts of interest including withdrawal of this RFP, and/or any short listing of a particular firm or firms in relation thereto or termination of a resulting contract if it determines that a conflict of interest has flawed the integrity of the consultant selection or engagement or in the performance of the Services.
- 1.7 Without limitation on the generality of the foregoing, Consultants shall not be recruited under the circumstances set forth below:
 - (a) Conflict between consulting activities and procurement of goods, works or services: Consultants or Sub-Consultants that have been engaged by the Client to provide goods, works or services for a project shall be disqualified from providing consulting services related to such project. Conversely, a consulting firm or individual consultant hired to provide consulting services for the preparation or implementation of a project shall be disqualified from subsequently providing goods, works or services resulting from or directly related to the firm's or individual consultant's services for such preparation or implementation.
 - (b) Consulting firms or individual consultants shall not be hired for any assignment that, by its nature, may be in conflict with another assignment of the firm or individual.
 - (c) Any previous or ongoing participation in relation to the assignment by Consulting firms or individual consultants, its key professional staff, or its affiliates or associates under a Contract with the Client shall result in rejection of proposal.
- 1.8 Consultants have an obligation to disclose any situation of actual or potential conflict of interest. Failure to disclose said situations may lead to the disqualification of the Consultant or the termination of its Contract.
- 1.9 No agency or current employees of the Client shall work as Consultants under their own ministries, departments or agencies. In order to determine whether a conflict of interest exists, prior written approval of the Client must be sought before former government employees or agencies of the Client are recruited to work for their former ministries, departments or agencies. When Consultants nominate any government employees or agencies as Personnel in their

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technical proposal, such Personnel must have written approval from their government or employer, confirming that they will be on leave without pay from their official position and available to work full-time on the assignment for the period required by the assignment and any reasonable extension thereof. Such approval shall be provided to the Client by the Consultant invited to contract negotiations, prior to commencement of negotiations.

Anticorruption

- 1.10 During the selection and execution of the contract the client observes and also expects consultants to observe highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the Client
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the selection process or in contract execution; and
 - (ii) “fraudulent practice” means a misrepresentation of facts in order to influence a selection process or the execution of a contract to the detriment of the Client, and includes collusive practices among consultants (prior to or after submission of proposals) designed to establish prices at artificial, noncompetitive levels and to deprive the Client of the benefits of free and open competition.
 - (b) will reject a proposal for award if it determines that the consultant recommended for award has directly, or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract in question;
 - (c) will cancel the contract if it at any time determines that corrupt or fraudulent practices were engaged in by representatives of the consultants during the selection process or the execution of the contract.
 - (d) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract;
- 1.11 Consultants shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the client in accordance with the above para 1.7.
- 1.12 Consultants shall furnish information as described in the financial proposal submission form.

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- 1.13 Consultants shall be aware of the provisions on fraud and corruption stated in the standard contract under the clauses indicated above.

Proposal Validity

- 1.14 The Data Sheet indicates how long Consultants' Proposals must remain valid after the submission date. During this period, Consultants shall maintain the availability of experts nominated in the Proposal. The Client will make its best effort to complete negotiations within this period. Eligibility of Sub-Consultants and Partners of a Joint Venture
- 1.15 In case a shortlisted Consultant intends to be the lead firm in an association with Sub-Consultants, or, if the Consultant is a Joint Venture, each Sub-Consultant and Joint Venture Partner shall be a citizen or legal entity, as the case may be, of India.

Clarification and Amendment of RFP Documents

- 1.16 Consultants may request a clarification of any of the RFP documents up to the number of days indicated in the **Data Sheet** before the proposal submission date. Any request for clarification must be sent in writing, or by standard electronic means to the Client's address indicated in the **Data Sheet**. The Client will respond in writing, or by standard electronic means and will send written copies of the response (including an explanation of the query but without identifying the source of inquiry) to all Consultants.
- 1.17 At any time before the submission of Proposals, the Client may amend the RFP by issuing an addendum in writing or by standard electronic means. The addendum shall be sent to all Consultants and will be binding on them. Consultants shall acknowledge receipt of all amendments. To give Consultants reasonable time in which to take an amendment into account in their Proposals the Client may, if the amendment is substantial, extend the deadline for the submission of Proposals.

Preparation of Proposals

- 1.18 The Proposal, as well as all related correspondence exchanged by the Consultants and the Client, shall be written in the English language.
- 1.19 In preparing their Proposal, Consultants are expected to examine in detail the documents comprising the RFP. Consultants whose proposals do not respond to the requirements of the documents comprising the RFP may fail to meet the minimum qualifying score as indicated in the **Data Sheet**.

Technical Proposal

- 1.20 While preparing the Technical Proposal, Consultants must give particular attention to the following:

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- (a) If a consulting firm considers that it does not have all the expertise for the Assignment, it may obtain a full range of expertise by associating with individual consultant(s) and/or other firms or entities in a joint venture relationship or sub-consultancy, as appropriate. Consultants may associate with other consultants. The Consultants are encouraged to seek participation of local consultants by entering into a joint venture with, or subcontracting part of the Assignment to local consultants. Association of short-listed firms/entities is not allowed.
- (b) In the event that the Consultant constitutes a Joint Venture, the Consultant shall submit (i) a copy of the Joint Venture Agreement with its Technical Proposal, and (ii) a power of attorney (executed by all partners) that authorizes the designated lead or managing Partner of the Joint Venture to act for and in behalf of the Joint Venture and to legally bind such Joint Venture in any contractual or similar documentation. Any Joint Venture agreement and Joint Venture power of attorney shall be attached to **TECH-1**, Standard Forms and submitted as part of the Technical Proposal of such Consultant.
- (c) The proposal shall be based on the number of key professional staff months estimated by the firms.
- (d) It is desirable that the majority of the key professional staff proposed be permanent employees of the firm or have an extended and stable working relation with it.
- (e) Alternative key professional staff shall not be proposed, and only one Curriculum Vitae (CV) may be submitted for each position. CVs of the experts should be signed by the experts themselves or by the authorized representative submitting the proposal.
- (f) The Technical Proposal shall not include any financial information. A Technical Proposal containing financial details will be declared non responsive.
- (g) The Technical proposal should provide the following information using strictly the attached Standard Forms (**Section 4**) only failing which the proposal may be summarily rejected.

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Financial Proposal

- 1.21 In preparing the Financial Proposal, consultants are expected to take into account the requirements and conditions of the RFP documents. The Financial Proposal should follow Standard Forms (**Section 5**). It should list all costs associated with the Assignment.
- 1.22 The Consultant shall submit a hard copy of the Financial Proposal using the attached standard forms. The Client shall read the Hard Copy during the public opening of Financial Proposals.
- 1.23 The Consultant may be subject to local taxes (such as: value added or sales tax, social charges or income taxes on nonresident International Personnel, duties, fees, levies) on amounts payable by the Client under the Contract. The Client will state in the **Data Sheet** if the Consultant is subject to payment of any local taxes. Any such amounts of taxes shall be excluded from the Financial Proposal as they will not be evaluated.

Submission, Receipt, and Opening of Proposals

- 1.24 The original Proposal shall be prepared in indelible ink. It shall contain no interlineation or overwriting, except as necessary to correct errors made by the firm itself. Any such corrections must be initialed by the person or persons who sign(s) the Proposals.
- 1.25 An authorized representative of the consulting firm initials all pages of the Proposal. The representative's authorization is confirmed by a written power of attorney accompanying the Proposal.
- 1.26 Technical Proposal, including original and all copies shall be placed in a sealed envelope clearly marked "**Technical Proposal**," and the Financial Proposal in a sealed envelope clearly marked "**Financial Proposal**" and warning: "**Do Not Open with the Technical Proposal**." Technical and Financial envelopes shall be placed into an outer envelope and sealed. This outer envelope shall bear the title "**Technical and Financial Proposal**". It should be sealed and must be clearly showing the name of the study, the submission address, date & time and other information as indicated in the **Data Sheet** and clearly marked, "**DO NOT OPEN, EXCEPT IN THE PRESENCE OF THE EVALUATION COMMITTEE**". EMD shall be in technical proposal envelope.
- 1.27 The Proposals must be sent to the address/addresses indicated in the **Data Sheet** and received by the Client not later than the time and the date indicated in the **Data Sheet**, or any extension to this date in accordance with para. 1.17.

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Any proposal received by the Client after the deadline for submission shall be returned unopened.

- 1.28 The Client shall open the Technical Proposal immediately after the deadline for their submission. The envelopes with the Financial Proposal shall remain sealed and securely stored.
- 1.29 From the time the Proposals are opened to the time the Contract is awarded, the Consultants should not contact the Client on any matter related to its Technical and/or Financial Proposal. Any effort by Consultants to influence the Client in the examination, evaluation, ranking of Proposals, and recommendation for award of Contract may result in the rejection of the Consultants' Proposal.
- 1.30 Evaluators of Technical Proposals shall not open the Financial Proposals until the technical evaluation is concluded”.

Evaluation of Proposals

- 1.31 The authorized Consultancy Evaluation Committee as a whole evaluates the proposals on the basis of their responsiveness to the **Terms of Reference**, applying the evaluation criteria, sub-criteria and point system specified in the **Data Sheet**. Each responsive proposal will be given a technical score. A proposal shall be rejected at this stage if it does not respond to important aspects of the Terms of Reference or if it fails to achieve the minimum technical score indicated in the **Data Sheet**.

Public Opening and Evaluation of Financial Proposals; Ranking

- 1.32 After the technical evaluation is completed, the Client shall notify those Consultants whose Proposals did not meet the minimum qualifying mark or were considered non-responsive to the RFP, indicating that their Financial Proposals will be returned unopened after completing the selection process. The Client shall simultaneously notify in writing Consultants that have secured the minimum qualifying mark, informing them of the technical scores obtained by their Technical Proposals, and indicating the date, time and location for opening the Financial Proposals. The expected date for the public opening of the Financial Proposals is indicated in the **Data Sheet**; the opening date should allow Consultants sufficient time to make arrangements for attending the opening. Consultants' attendance at the opening of Financial Proposals is optional.
- 1.33 Financial Proposals shall be opened publicly in the presence of the Consultants' representatives who choose to attend. The name of the

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Consultants and the technical scores of the Consultants shall be read aloud. The Financial Proposal of the Consultants who met the minimum qualifying mark will then be inspected to confirm that they have remained sealed and unopened. These Financial Proposals shall be then opened, and total prices read aloud and recorded. Copy of the record shall be sent to all Consultants.

- 1.34 The evaluation committee will review the detailed content of each Financial Proposal. During the review of Financial Proposals, the Committee and any Client personnel and others involved in the evaluation process, will not be permitted to seek clarification or additional information from any Consultant, who has submitted a Financial Proposal.
- 1.35 The Consultancy Evaluation Committee will determine whether the Financial Proposals are complete, (i.e., whether they have costed all items of the corresponding Technical Proposals, if not the client will cost them and add their cost to the initial price), correct any computational errors, and convert prices in various currencies to the single currency specified in **Data Sheet**. After all verification and correction, the evaluated total price (ETP) in Indian Rupee for each Financial Proposal will be determined.
- 1.36 To allow comparison on a common basis, the lowest evaluated Financial Proposal will receive the maximum score of 1,000 marks. The score for each other Financial Proposal is inversely proportional to its ETP and will be computed as follows:

$$S_f = 1,000 \times F_m / F$$

Where: S_f is the financial score of the Financial Proposal being evaluated,
 F_m is the ETP of the lowest priced Financial Proposal,
 F is the ETP of the Financial Proposal under consideration.

- 1.37 A maximum budget is specified in the **Data Sheet**, Financial Proposals must be within such maximum budget. If any proposal exceeds such maximum budget, such proposal will be held non-responsive and be given a zero score. In such cases, if the firm submitting a Financial Proposal exceeding the maximum budget still obtains the highest combined score in final ranking, this winning firm will be advised, as a condition of contract negotiations, to reduce the Financial Proposal to the maximum budget without compromising the TOR for the assignment (and without modification of proposed unit rates.)
- 1.38 Proposals will finally be ranked according to their combined technical (S_t) and

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financial (Sf) scores using a weight of 70% for technical proposal and 30% for financial proposal. The Consultant securing the highest score will be invited for negotiations on date specified in the **Data Sheet**.

Discussions/ clarifications with the successful bidder

- 1.39 The aim is to reach agreement on all points, and initial a draft contract by the conclusion of Negotiations. Negotiations shall commence with a discussion on technical proposal, the proposed methodology (work plan), staffing and any suggestions you may have made to improve the TORs. Agreement must then be reached on the final TORs, the staffing and staff months, logistics and reporting. Special attention shall be paid to optimize the required outputs from the Consultants and to define clearly the inputs required from the Client to ensure satisfactory implementation of the Assignment.
- 1.40 Changes agreed upon will then be reflected in the draft contract, using proposed unit rates (no negotiation of the unit rates, including the man month rates).
- 1.41 Having selected Consultants, among other things, on the basis of an evaluation of proposed key professional staff, the Client expects to negotiate a contract on the basis these staff named in the proposal and, prior to contract negotiations, will require assurance that these staff will be actually available.
- 1.42 The negotiations will be concluded with a review of the draft form of Contract. The Client and the Consultants will finalize the contract to conclude negotiations.

Award of Contract

- 1.43 After completing negotiations the Client shall award the Contract to the selected Consultant and notify the other Consultants who could have been invited to negotiate a Contract that they were unsuccessful.
- 1.44 The Consultant is expected to commence the Services on the date and at the location specified in the **Data Sheet**.

Confidentiality

- 1.45 Information relating to evaluation of proposals and recommendations concerning awards shall not be disclosed to the consultants who submitted the proposals or to other persons not officially concerned with the process

Section 3: DATA SHEET

Reference Para	Details
1.1	Name of the Client and Address: Director, National Fire Service College, Nagpur, Ministry of Home Affairs, Government of India, <u>Civil Lines, Palm Road, NAGPUR-440 001.</u>
1.2	Method of Selection: Double Bid System
1.19	Minimum required score for Technical Bid: 750 from a maximum of 1,000 points.
1.31	Evaluation Criteria for Technical Bid: <ul style="list-style-type: none"> • Qualification/Experience of the Firm – 200 marks • Approach, Methodology and Work Plan – 400 marks • CVs of Key Professionals – 400 marks
1.26	Financial Proposal to be submitted together with Technical bid and EMD : Yes
1.18	Language of Proposals: English

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Reference Para	Details
1.35	Cost of Financial Proposals: Indian Rupees
1.3	<p>A pre-Bid meeting will be held: Yes</p> <p>The date and venue will be intimated to consultants/Firms</p> <p>The Client / Representative is:</p> <p>Name: Shamim</p> <p>Designation: Director</p> <p>Contacts Numbers: <u>0712-256 5074, 256 0476, 256 0179</u></p> <p>Tele fax: <u>0712-256 0075</u></p> <p>E-mail ID: <u>nfscnagpur-mha@nic.in</u></p>
1.16	<p>Clarifications of RFP may be requested not later than 15 days before the submission date.</p> <p>The address for requesting clarifications is:</p> <p>Name: Shamim</p> <p>Designation: Director</p> <p>Contacts Numbers: <u>0712-256 5074, 256 0476, 256 0179</u></p> <p>Tele fax: <u>0712-256 0075</u></p> <p>E-mail ID: <u>nfscnagpur-mha@nic.in</u></p>

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Reference Para	Details
1.20(a)	Shortlisted Consultants may associate with other shortlisted Consultants: No
1.14	Validity of Proposal: 90 days after the submission date.
1.4	<p>The Client will provide the following inputs and facilities:</p> <p><u>All available information, data and reports related to the project. Collecting any other data relevant to the assignment will be the responsibility of the Consultant.</u></p>
1.27	<p>Consultants must submit an original and Five additional copy of the Technical bid and an original Financial bid at the following address:</p> <p>Director, National Fire Service College, Nagpur, Ministry of Home Affairs, Government of India, <u>Civil Lines, Palm Road, NAGPUR-440 001.</u></p>
1.27	<p>Proposals must be submitted not later than the following date and time:</p> <p>14th June2011 from advertisement, time on 2.00pm.</p>
1.32	Expected date for public opening of Financial Proposals:
1.38	Expected date for contract negotiations:

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Reference Para	Details
1.44	The Assignment is expected to commence by: within fortnight after work assigned to Consultant/Firms
1.44	Duration of Assignment: --- 21 Months or latest by March 2013

Section 4. Technical Proposal - Standard Forms

TECH-1 Technical Proposal Submission Form

TECH-2 Consultant's Organization and Experience

A Consultant's Organization

B Consultant's Experience

TECH-3 Comments or Suggestions on the Terms of Reference and on Counterpart Staff and Facilities to be provided by the Client

A On the Terms of Reference

B On the Counterpart Staff and Facilities

TECH-4 Description of the Approach, Methodology and Work Plan for Performing the Assignment

TECH-5 Team Composition, Task Assignments, and Summary of CV Information

TECH-6 Curriculum Vitae (CV) for Proposed Professional Experts

TECH-7 Personnel Schedule

TECH-8 Work Schedule

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FORM TECH-1 TECHNICAL PROPOSAL SUBMISSION FORM

[Date]

To

Director, National Fire Service College, Nagpur,

Ministry of Home Affairs, Government of India,

Civil Lines, Palm Road, **NAGPUR-440 001.**

Dear Sir,

We, the undersigned, offer to provide the consulting services for comprehensive planning, design and supervision of construction, installation and commissioning of **“Field Training Modules for Rescue & Fire Fighting and Emergency Services and preparation of training courses on each modules and designing of course contents for 31 proposed courses”** in accordance with your Request for Proposal dated **XX 2011** and our Proposal. We are hereby submitting our Proposal, which includes this Technical Proposal, and a Financial Proposal sealed under a separate envelope.

We are submitting our Proposal in association with/as a Joint Venture: *[Insert a list with full name and address of each Joint Venture Partner or sub-Consultant if proposed or write as Not Applicable]*. Attached is the following documentation: *[Joint Venture Agreement and Joint Venture power of attorney for Lead Partner]*.

We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.

If negotiations are held during the period of validity of the Proposal, i.e., before the date indicated in Clause Reference 1.14 of the Data Sheet, we undertake to negotiate on the

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basis of the proposed personnel. Our Proposal is binding upon us and subject to the modifications resulting from contract negotiations.

We undertake, if our Proposal is accepted, to initiate the consulting services related to the assignment not later than the date indicated in Clause Reference 1.44 of 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: _____

Name of Firm: _____

Address: _____

FORM TECH-2 CONSULTANT'S ORGANIZATION AND EXPERIENCE

A - Consultant's Organization

[Provide here a brief (two pages) description of the background and organization of the Consultant and if applicable, Sub-Consultant and each Joint Venture Partner for this assignment.]

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B - Consultant's Experience

*[Using the format below, provide information on each assignment **in last 10 years** for which your firm, and each Joint Venture partner or sub-Consultant for this assignment, was legally contracted either individually as a corporate entity or as one of the major companies within a joint venture or sub-consultancy, for carrying out consulting services similar to the ones requested under this assignment. **Use a maximum of 20 pages.**]*

Assignment name:	Approx. value of the contract :
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total N ^o of person-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current US\$):
Start date (month/year): Completion date (month/year):	No. of professional person-months provided by the Joint Venture Partners or the Sub-Consultants:
Name of joint venture partner or sub-Consultants, if any:	Name of senior regular full time employees of your firm involved and functions performed (indicate most significant profiles such as Project Director/Coordinator, Team Leader):

Appointment of consultant

Narrative description of Project:	
Description of actual services provided in the assignment:	

Firm's Name: _____

FORM TECH-3 COMMENTS AND SUGGESTIONS ON THE TERMS OF REFERENCE AND ON COUNTERPART STAFF AND FACILITIES TO BE PROVIDED BY THE CLIENT

A - On the Terms of Reference

[Present and justify here any modifications or improvement to the Terms of Reference you are proposing to improve performance in carrying out the assignment (such as deleting some activity you consider unnecessary, or adding others, or proposing a different phasing of the activities). Such suggestions should be concise and to the point, and incorporated in your Proposal.]

B – On Counterpart Staff and Facilities

[Comment here on Counterpart Staff and Facilities to be provided by the Client according to Clause Reference 1.4 of the Data Sheet]

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FORM TECH-4 DESCRIPTION of Approach, Methodology and Work Plan for Performing the Assignment

*[You are suggested to present your Technical Proposal in **maximum of 30 pages**. Your technical proposal should be consistent with the Form Tech-7: Staffing Schedule and Form TECH-8: Work Schedule]*

FORM TECH-5 TEAM COMPOSITION, TASK ASSIGNMENTS, AND SUMMARY OF CV INFORMATION

Family Name, First Name	Firm Acronym	Position Assigned	Task Assigned	Citizenship	Education/Degree (Year/Institution)	No. of years of relevant project experience

FORM TECH-6 CURRICULUM VITAE (CV) FOR PROPOSED EXPERTS

1. **Proposed Position** [*only one candidate shall be nominated for each position*]: _____

2. **Name of Firm** [*Insert name of firm proposing the expert*]: _____

3. **Name of Expert** [*Insert full name*]: _____

4. **Date of Birth:** _____ **Citizenship:** _____

5. **Education** [*Indicate college/university and other specialized education of expert, giving names of institutions, degrees obtained, and dates of obtainment*]: _____

6. **Membership in Professional Associations:** _____

7. **Other Training** [*Indicate significant training since degrees under 5 - Education were obtained*]: _____

8. **Countries of Work Experience:** [*List countries where expert has worked in the last ten years*]: _____

9. Languages *[For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing]:* _____

10. Employment Record *[Starting with present position, list in reverse order every employment held by expert since graduation, giving for each employment (see format here below): dates of employment, name of employing organization, positions held.]:*

From [Year]: _____ To [Year]: _____

Employer: _____

Positions held: _____

<p>11. Detailed Tasks</p> <p>Assigned <i>[List all tasks to be performed under this assignment]</i></p>	<p>12. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</p> <p><i>[Among the assignments in which the expert has been involved, indicate the following information for those assignments that best illustrate the expert's capability to handle the tasks listed in line 11.]</i></p> <p>Name of assignment or project: _____</p> <p>Year: _____</p> <p>Location: _____</p> <p>Client: _____</p> <p>Main project features: _____</p> <p>Positions held: _____</p> <p>Activities performed: _____</p>
---	--

13. Certification:

I understand that any willful misstatement described herein may lead to disqualification or dismissal, and/or any other disciplinary action being taken by Client.

_____ Date: _____

[Signature of expert or authorized representative of the firm]

Day/Month/Year

Full name of authorized representative:

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FORM TECH-7 STAFFING SCHEDULE

N°	Name of Expert /Position	Expert input (in the form of a bar chart)													Total person-month input			
		1	2	3	4	5	6	7	8	9	10	11	12	n	Home	Field	Total	
1		[Home]														/		
		[Field]																
2															/			
3															/			
															/			
Total														/				

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FORM TECH-8 WORK SCHEDULE

N°	Activity ¹	Months ²												
		1	2	3	4	5	6	7	8	9	10	11	12	n
1														
2														
3														
4														
5														

SECTION 5: FINANCIAL PROPOSAL STANDARD FORMS

FIN 1: Financial Proposal Submission Form

FIN 2: Summary of Costs

FIN 3: Breakdown of Remuneration and Other Costs

FIN 1: FINANCIAL PROPOSAL SUBMISSION FORM

[Location, Date]

To

The Director, National Fire Service College, Nagpur,

Ministry of Home Affairs, Government of India,

Civil Lines, Palm Road, **NAGPUR-440 001.**

Dear Sir,

We, the undersigned, offer to provide the consultancy services for comprehensive planning, design and supervision of construction, installation and commissioning of **“Field Training Modules for Rescue & Fire Fighting and Emergency Services and preparation of training courses on each modules and designing of course contents for 31 proposed courses”** in accordance with your Request for Proposal and our Technical Proposal. Our attached Financial Proposal is for the sum of [Insert amount(s) in words and figures] including all taxes.

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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 Clause Reference 1.14 of 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: _____

Name of Firm: _____

Address: _____

FIN 2: SUMMARY OF COSTS

<u>Items</u>	<u>Amount</u>	<u>In figures</u>	<u>In words</u>
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1.	Consultancy services for ----- -----		
----	--	--	--

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Signature of Consultant & Seal

(Authorized representative)

Appointment of Consultant

FIN 3: BREAKDOWN OF REMUNERATION AND OTHER COSTS

A. Remuneration of Staff:

Staff Position	Name	Monthly Rate (INR)	Input in Man Months	Total Cost (INR)
1				
2				
3				
.				
.				
.				
.				
n				

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Sub-Total A			
--------------------	--	--	--

B. Out-of-Pocket Expenses:

Head		Unit Rate	Unit/ Days	Total Cost (INR)
Travel	Air fare			
	Other travel			
Stay and Per Diem				
Sub-Total				

C. Other Expenses:

Head	Unit Rate	Unit/ Days	Total Cost (INR)

Office and Documentation			
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D. TOTAL COST ESTIMATE: (Subtotal A+B+C) _____

SECTION 6

TERMS OF REFERENCE (tOr) FOR CONSULTANTS

A. Background

FIELD TRAINING FOR FIRE & EMERGENCY PERSONNEL

1.1 PREFACE:

The Fire & Emergency Service department, regardless of size and operational area, manage more complex fire prevention and protection demand than those inherited from their predecessors. The complexities include: extensions for large spectrum of occupancies starting from residential, educational, hospitals, shopping malls mass transit systems, large food court & restaurants, modern offices, storage and industrial. The new materials used for construction and interiors and their behavior under fire /emergency conditions, bulk transport and storage of hazardous material, high speed automobiles, response to natural disaster have further added to the problem encountered by the fire & emergency service personnel. The changed scenario calls for a re-look on the training and education policy that is primary used on the recommendations made by the expert committee constituted by the MHA way back in 1952. In this backdrop it is proposed to develop training and education supported by applied research facilities at proposed NFSC campus that commensurate the today`s need.

1.2 FIRE GROUND CHALLENGES

The fire & emergency personnel face several challenges while dealing with fires and other emergencies. All fires are different and there is no standard approach that would help them manage the affairs on the fire ground. However, in most fire conditions several of the following challenges are encountered:

- a. Hot and humid conditions;
- b. Entry into confined space;
- c. Flash back and flash over;
- d. Explosions;
- e. Problem due to smoke;
- f. Problem in extricating the trapped victims;
- g. Operating limitations of equipment and appliances;
- h. Danger of collapse of structure; and
- i. Deep seated vapour/gas fires.

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This necessitate the repeated exposures of the personnel to above mentioned and learn to perform under hostile and unsafe working conditions and understand the intricacies of various fire ground strategy and tactics.

1.3 TRAINING OBJECTIVE

The sole objective of training the fire & emergency service personnel is to groom them to react to all incidents regardless of their size and nature in orderly manner and to be capable of managing the safely and perform with excellence to the expectations of the society.

1.4 TRAINING METHODOLOGY

The desired and required level of performance for operational and non-operational job functions of the fire & emergency service personnel could be achieved through a balance of educations, training and experience and therefore, every single person needs to be exposed repeatedly to the challenges normally encountered while dealing with an emergency through:-

- a. Routine operations training;
- b. Table top training;
- c. Dry runs; and
- d. Real time simulations.

1.5 TRAINING MODULES

The proposed training modules are broadly classified in to two groups:

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- a. **Group I** : This included non-structural modules viz. experimental work in Laboratory and working on Table Top simulators designed for dealing with high rise buildings, industrials occupancies, air crash, road and rail accidents, dealing hazardous materials and hydrocarbons fires; and
- b. **Group II** : This comprised of structural facilities designed for dry runs and real time experiences for self assessment on performance concerning dealing strategy, selection & performance of equipment and appliances and command and control of the incident .

1.6 NON STRUCTURAL MODULES

The non-structural training modules proposed for the campus included:

Virtual simulators: These are proposed with a view that officer can learn fire ground strategy and understand the implications of each without any fear or threat to safety and then finally work on real time fire / emergency situations.

1.7 STRUCTURAL MODULES

The fire accidents in urban area are a blend of experience and could be divided into following three groups:-

- a. The fire accidents involving residence, educational, hospitals, assembly, business, mercantile, storage buildings. Besides, including petrol pump & gas godowns, small & medium scale industries and gas pipelines;
- b. The fire accidents involving large industries, road accident/automotive fires;
- c. Fires involving chemicals, hydrocarbons, plastics and rubber manufacturing and storage, gas facilities, hazardous chemicals; and

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- d. Special fires involving aircrafts, lifts, escalators, temporary structure, sewer lines, outdoor electrical facilities such as transformer and high tension lines, rail coach fires, collapsed structures and under water rescues.

These fires/accident invariably have a varying degree of surprise component in regard to the risk and accessibility and have claimed the lives of many fire fighter and therefore, call for training to personnel to make them understand the complex fire behavior, punishment of heat, smoke, falling debris, behavior of structure at high temperature and learn the implications of different fire ground strategy and tactics, safe operating procedures, fire ground communication and command & control to perform safely and effectively.

In this back drop and keeping in view the capital and operating cost and optimal use of facilities following integrated structural training modules are proposed:-

- a. **Module 1: Multiple Non-Industrial Occupancy:** A ground plus five floors and two basements with central atrium and a terrace water tank of 100,000 litres capacity made of concrete with inner linings of fire bricks to facilitate simulation of real time environment without any damage to structure for repeated high temperature conditions. This module would suffer for training needs of residential, educational, assembly (restaurants and cinema theatres), offices, shops/large departmental stores, hospitals, car parking and sub surface services like a/c plants, electric sub stations (transformers, HT/LT panel and cable trench), lifts and escalators, confined spaces (depicting ship holds, sewer, machine rooms), underground storage. This structure would also have the entire range of fire suppression and detection & alarm devices, hose reels, internal hydrants, automatic sprinklers and drenchers, gas flooding systems, details of facilities fire pumps of different types, venting facilities both ducted and non ducted, smoke curtains, compartmentation techniques, escape route planning, electrical installations and safety measures for the personnel to learn designing and installation of various systems, acceptance testing and maintenance, and understand the operating advantage and limitation of each system.

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- b. **Module 2: Multiple Industrial Occupancy:** A ground plus one floor with a basement concrete structure with inner brick lining and designed to house rubber/plastic, garment, packaging, printing press, electronic industries on the ground and first floor and high rack storage in the basement for each floor occupancy.
- c. **Module 3:** Urban search and Rescue: Partially constructed ground plus four floor RCC framed brick construction with projected and crisscrossed beams and large quantity of rubbles for facilitating the training on operation of search and rescue equipment to extricate trapped persons as experienced during earthquake and other collapsed structure.
- d. **Module 4: Hydro-carbon and hazmat Facilities:** This open structure is comprised of RCC frame and distillation column. Silo, pipe lines from 2-6 inch diameter with flange joints, electric motors , heat exchangers to depict a chemicals/hydrocarbon processing plant and having storage tanks, LPG bullet and similar other industrial facilities for imparting training on gas & pressurized oil fires , leakage, storage facilities fires, hazardous chemicals emergencies (fire and non –fire conditions) and operation of fixed installation : water spray high pressure water projectors, foam/water monitors, foam chamber/pourer, yard hydrants.

All these modules are expected to spread over an area of about 4-5 acres.

FACILITIES REQUIRED FOR NON-STRUCTURAL MODULE

(VIRTUAL SIMULATORS)

1. INTRODUCTION

The virtual simulators are proposed with a view to develop skills as an Incident Commanders to deal with any kind of emergency – fire, rescue including handling of disasters.

2. VIRTUAL SIMULATORS:

Advance Disaster Management Simulators should be state-of –the-art simulation technology and equipment by capable of simulating: training scenarios as real-time situations with no predetermined outcomes, and true physics based threat models and environmental effects and having capability to provide training in a wide area of emergency response situations, including:

- i. Fire fighting
- ii High –rise Buildings
- iii HAZMAT response
- iv Emergency preparedness
- v Disaster Management

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- vi Terrorism mitigation
- vii Risk assessment
- viii Natural disasters
- ix Hostage situations

These simulators shall provide facility for the trainees to learn, retain and rehearse the four C's of disaster management, Command, Control, Coordination and Communication and provide for trainees to develop thought-processing skills by responding to situations, observing the result of their actions and reacting to the new set of situational inputs, all in real time, Trainees are immersed in scenarios" realistic virtual representations and three-dimensional audio environment, Exercises can be constructed to include specifics such as aircraft, vehicle or building type, incident location, ambient temperature, wind direction and strength, weathers conditions, type and development of fire, and number and locations of casualties and survivors, among other details, Scenarios are based on real-world and possible incidents, so trainees make decisions under realistic stressful conditions.

2.1 **Range of training options-** from novice to advanced. Cognitive and procedural skills learned under low-stress conditions (traditional classroom study and drills) deteriorate under the high-stress conditions of a real incident. Mental stress indicators include slow reaction times, an inability to consider more than one factor at once, perceived tension and in extremes, freezing in thought and action. Virtual simulators shall allow progressive training, presenting trainees with an opportunity to build decision-making capabilities while gradually increasing stress levels.

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- 2.2 **Environmentally safe.** Simulated fire and hazardous materials incidents shall have no pollution or negative impacts on the environment.
- 2.3 **Exercise repeatability:** The Simulators shall provide for numbers of individuals to practice the same scenario (for testing and assessment), or scenarios can be rerun for improvement or practice of new tactics and techniques.
- 2.4 **Exercise review.** The simulators shall provide for recording the exercise for effective debriefing and shall provide for the instructor to replay the scenario, view it from any visual location and pause to point out key factors to the trainee.
- 2.5 **Computerized scoring.** The simulators shall be capable of assessing responders' abilities with detailed, objective and reliable information generated by the trainees' own decisions, as well as input subjective, observed information.
- 2.6 **Real-time events.** All events generated by simulators shall occur in real time and are fully interactive.
- 2.7 **Scenario flexibility.** The simulators shall incorporate simulation factors- i.e. weather, wind speed and direction.
- 2.8 **Systems flexibility.** The simulators shall be capable of creating new incidents during an exercise and capable of adding additional components (Vehicles, terrain, building, etc.) at any times.
- 2.9 **Team training.** The simulators shall be networked to provide team training to multiple agencies and teams.
- 2.10 **Infinite numbers of training scenarios.** The simulators shall have the capacity to change with each exercise and offer trainees unexpected variables within an exercise (for example, trainers can change wind and weathers conditions or blow a tire on a rescue vehicle) and have ability to conduct team training, The simulators shall simulate disasters to safely practice and fine- tune strategies, and has been recognized by regulatory, advisory and industry agencies as a powerful tools in the development and validation of contingency plans.
3. **HOW SHOULD THEY WORK? :**

The simulators shall be designed to provide as realistic an environment as possible for the training responder as if the trainees were at an actual incident, he would survey the incident site and use a hand-held radio to receive information and issue order and each trainee stands at a podium in front of a screen displaying a three-dimensional virtual view of the incident. Trainees move around the incident scene using a

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joystick attached to the podium. Trainees issue orders and receive commands or information via a hand-held radio. Seated behind the students is a facilitator who receives trainee radio communications and implements order. The facilitator monitors the radio channels and inputs commands (Such as vehicle placement, deployment of hand lines, connecting to hydrants, rescuing people, etc.) with a user-friendly points-and-click menu system. The simulators shall allow instructors to monitor and capture a student's response to a particular scenario. During the scenario, the instructor can freeze, stop and restart the exercise. The entire exercise is recorded, giving the instructor the capability to conduct a comprehensive debriefing. He can replay the entire exercise and freeze, play back and fast forward to specific points of the student's response to teach different tactics and skills, training are completed; the instructor can print a detailed report.

4.0 **SYSTEM COMPONENTS**

4.1 **HARDWARE:** The hardware shall be comprised of five (5) Training Station consisting of a high-end laptop or desktop, projector and screen or plasma display, joystick and radio. The three-dimensional environment is viewed on the screen located in front of each training station. The image is a 40x30 degree view as seen from the trainee's viewpoints. Visuals are also configurable as full immersion screens, especially appropriate for IC Stations. Movement is controlled in real-time using the multi-axis joystick and shall utilize a directional, immersive sound system for each training station. The sounds represent real world sources environment, vehicles, people, fires, etc., and emanate from their appropriate direction to greatly enhance immersion into the synthetic environment, integrated radio communications system allows trainers and trainees to issue and receive commands as they would during actual incidents.

4.2 **SOFTWARE:** The simulator software shall be suitably designed, 1 commercial building, road traffic accidents 4 locations with a varying number to provide database for the following key features:

A Urban Area

- i 300 building- apartment building, commercial building, shops, houses, gas Station.
- ii 50 road intersections, may with working traffic lights

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- iii 20 different fire stations locations
 - iv 2 bridges
 - v 1 tunnel
 - vi railroad track
 - vii 5 lakes
 - viii 2,000 trees of various types and sizes
-

B Airport.

- i 2 runways
- ii 20 taxi-ways
- iii 2 terminals
- iv 50 gates
- v aircraft

The virtual simulator shall provide for total of thirty (30) responder vehicles (fire, Rescue, Police, and Medical, civilian)

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vi. Menu System: The simulators shall have facility for instructor interface and the method by which he selects a scenario for a training exercise, begins the exercise and facilitates the commands given by the trainee. It is used to generate new scenarios and/or makes modifications to existing ones.

vii Visual Model Behavior This shall include all the behavior of the physical Components such as walking, running, sliding down an escape chute, climbing ladders, giving signals etc.

viii Smart- model TM Behavior, The simulators shall encompass all the Jobs that the visual models can do. This shall include:

viii a Fight Fire

viii b Ride on truck

viii c Walk

viii d Suffer injuries

viii e Climb down ladder

viii f Deploy hand-line

viii g Establish triage area

viii h Remove Injures

4.2.1 OBJECTIVE AUTOMATED SCORING INFORMATION SYSTEM (OASISTM)

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Traditionally: This simulator shall be designed to facilities measurement of performance for emergency response trainees by collecting a large amount of data on such items as time needed to extinguish the fire, amount of resources used, etc. When the exercise is completed, the trainee's score is displayed on the screen, scoring is based on specific values such as the size and intensity of the fire, amount of water used, amount of foam used, temperature of the fire and number of injuries and all scores can be saved to disk, displayed on the screen and printed on a student lesson log.

4.2.2 SCENARIO GENERATION

The simulators shall allow developing a limitless number of scenarios for used in training. The Scenario Generator establishes basic conditions for a training exercise within the border environment and emergency situations or scenarios can be saved for multiple uses or new ones can be developed at any time.

Availability of emergency response, vehicles and their functionality, The Scenarios Generator shall permit changes in these conditions during the progression of the incident. As personnel develop their disaster management command skills, the instructor can insert such events as wind direction changing during the incident, possibly necessitating a redeployment of the emergency response vehicles. This shall be programmed into the incident during the development of the initial conditions, or by utilizing the command override option. Instructors can also cause a malfunction such as an engine breakdown, air lock, etc., to force the trainee to re-evaluate the command management strategy.

4.2.3 OPERATIONAL MANUALS

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The supplier shall provide three (3) sets of Operational and maintenance Manual. The manuals will include complete operating instructions, maintenance procedures, parts lists and electrical schematics along-with two (2) sets of manufacture's manuals for all control devices and other applicable equipment.

4.2.4 TRAINING

The supplier shall impart training to instructors for 2 weeks. In addition, supplier will provide a Six (6) days training course at the Customer's facilities once the system has been installed and commissioned.

FACILITIES REQUIRED FOR STRUCTURAL MODULE 1

(NON-INDUSTRIAL OCCUPANCY)

1. **General** : The structure shall have a ground place five upper floors and two basements and shall be so designed to and training facilities and distributed in such a manner that it makes building compact, safe for repeated exposure to high temperature conditions without any damage to the core structure, look like real time environment and operationally safe for training in accordance with international practices, All fire areas shall be provided with firebrick lining that could be repealed as and when damaged.

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2. **Residential occupancy:** A residential flat 70-80 m² shall be provided on any floor of the building for demonstrating fires in kitchen and bedroom and venting practices.
3. **Auditorium:** A part of the floor area shall be designed as an auditorium to demonstrate evacuation, fire fighting and venting techniques, and accidents in projection room.
4. **Institutional Occupancy:** A part of the floor area shall be designed to demonstrate fire fighting and evacuation techniques for dealing with fire accidents in post surgery recovery room (ICU) and patients ward. The width of corridor and doors shall be designed to facilitate patients' movement on bed for horizontal evacuation using aerial platform.
5. **Balcony/Refuge area:** This shall be planned at the topmost floor of the building to demonstrate forcible entry in to the building, rescue operations using aerial platform and external fire fighting.
6. **Office Occupancy:** A part of the floor area shall be designed to demonstrate fire in office, server room and pantry.
7. **Mercantile occupancy:** The part of the floor area shall be designed to demonstrate fires in shops and lofts, fire and smoke movement in departmental store with mezzanine floor.
8. **Atrium:** The structure should be suitably designed with the centrally located atrium extending from the ground floor to the top and enclosed at terrace level. The atrium shall be ventilated at top in accordance with National Fire protection Association Standard 92 B for fire size of 3MW.

- 9. Escalator:** The building shall be provided with one escalator in the atrium connecting the ground and first floor for study of fire accidents and also designed to demonstrate casualty extrication techniques. The escalators shall be provided with automatic sprinkler system in accordance with NFPA Standard 13.
- 10. Lift:** A lift extending from the second basements to the floor shall be provided in the building at one corner to demonstrate various techniques recommended for rescue of person trapped within the lift car and in between the lift car and lift shaft. The lift and lift lobby shall be pressurized for a pressure difference of 50 Pascal.
- 11. Staircases:** The building shall be provided with two stair cases 1.5 m in width one of which shall be open staircases to demonstrate spread of smoke while the second one shall be enclosed type and protected with multiple point injection pressurization system.
- 12. Fire Detection and Signalling devices:** The building shall be provided with automatic fire detection and alarming devices with processor in the control room.
- 13. Fire Suppression devices:** The building shall be provided with two standpipe near the staircases in accordance with IS 3844, sprinkler and drencher system in accordance with NFPA standards, hose reels in accordance with IS 884 and four nos. of external hydrants on the four sides of the building.
- 14. Water tank:** A 100,000 litres capacity water tank shall be provided at the terrace with pumps to feed water to automatic sprinklers, drenchers, stand pipes, and hose reels provided in the building.

- 15. Upper basement:** The Upper basement shall be designed for housing car park and offices. Two fire corridors on the periphery, ramp and one open and one enclosed staircases shall be provided. The fire corridors shall have fire rated half height glazing for instructors to keep an eye on the performance of the trainees and for use as an emergency exit. About 40-50 m² area shall be designed for 3 MW fire conditions and shall be suitably compartmented using automatically actuated (and also with manual over-side) smoke drop/curtain, ducted smoke exhaust (exhaust and supply) and jet fan system of smoke venting.
- 16. Breathing apparatus training facilities and confined spaces:** The part of the upper and lower basement shall be designed for use as training facilities for demonstrating fires in ship hold, use as breathing apparatus gallery for hot and smoke conditions. The facilities must include climbing, crawling through confined space with several obstacles including pipes, U-turns, shallow water, passing through hatches under hot & humid and poor visibility conditions. Suitable provisions shall be made for emergency exits at appropriate levels. Two classrooms for 30 students shall be provided in the building for exercise briefing and debriefing shall be provided in the building for exercise briefing and debriefing purpose. The training facility shall include emergency venting, water deluge for fire suppression.
- 17. Lower basement :** The lower basement shall be designed for demonstrating fires in electrical facilities such as HT and LT panel, Transformers, cable gallery, AC plant Room, generator room and a large store and a kitchen with piped gas supply to demonstrate kitchen hood and store fires. Mechanized smoke venting shall be provided in the entire basement area.
- 18. Flash Over & Flash Back:** Suitably engineered facilities shall be provided in the building for demonstrating flash over fires.

FACILITIES REQUIRED FOR STRUCTURAL MODULES 2

(INDUSTRIAL OCCUPANCY)

1. **General:** The structure shall have ground plus upper floor with one basement and shall be so designed to and training facilities and distributed in such a manner that it makes building compact, safe for repeated exposure to high temperature conditions without any damage to the core structure, look like real time environment and operationally safe for training in accordance with international practices. All fire areas shall be provided with firebrick lining that could be replaced as and when damaged.
2. **Basement:** The basement of the building shall be designed for simulating fires involving rack storage, stacked solid fuel and containers for imparting training in dealing with storage occupancy fires. It shall have two staircases and fire corridors for facilities emergency exit and provided with smoke and sprinkler system.
3. **Ground floor:** The ground floor shall be designed to look like a factory to manufacture plastic /rubber products and shall have facilities like extruder, piped steam supply, electric motors, hydraulic press, moulding machines, furnace, grinder, drilling machines, lathe etc and necessary facilities for simulating fires in industry for imparting training on handling industrial fires and venting practices. The entire area shall be provided with sprinkler system.
4. **First floor:** The first floor shall be designed to look like a garment factor, packaging industry, and electronic /electrical industry and necessary facilities for simulating fires in industry and necessary facilities for simulating fires in industry for importing training on handling industrial fires and vent practices. The entire area shall be provided with sprinkler system and venting facilities. Performance of equipment and appliances and command and control of the incident.

1.5 NON-STRUCTURAL MODULES:

The non-structural training modules proposed for the campus included:

Virtual simulators: These are proposed with a view that officer can learn fire ground strategy and tactics and understand the implications of each without any fear or threat to safety and then finally work on real time fire/emergency situations. The details of these virtual simulators are given in

1.6 STRUCTURAL MODULES

THE FIRE ACCIDENTS IN URBAN AREA ARE A BLEND OF EXPERIENCES AND COULD BE DIVIDED INTO FOLLOWING THREE GROUPS:-

- a. The fire accidents involving residential, educational, hospitals, assembly, business, mercantile, storage building. Besides, including petrol pumps & gas godowns, small & medium scale industries and gas pipelines;
- b. The fire accidents involving large industries, road accident/automotive fires;
- c. Fires involving chemicals, hydrocarbons, plastic and rubber manufacturing and storage, gas facilities, hazardous chemicals; and
- d. Special fires involving aircrafts, lifts, escalators, temporary structures, sewer lines, outdoor electrical facilities such as transformers and high-tension lines, rail coach fires, collapsed structures and under water rescues.

These fires/accidents invariably have a varying degree of surprise component in regard to the risk and accessibility and have claimed the lives of many fire fighters and therefore, call for training to personnel to make them understand the complex fire behavior, punishment of

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heat, smoke, falling debris, behavior of structure at high temperatures and learn the implications of different fire ground strategy and tactics, safe operating procedures, fire ground communication and command & control to perform safely and effectively.

In this back drop and keeping in view the capital and operating cost and optimal use of facilities following integrated structural training modules are proposed:-

- a. **Module 1: Multiple Non-Industrial Occupancy:** A ground plus five floors and two basements with central atrium and a terrace water tank of 100,000 litres

FACILITIES REQUIRED FOR STRUCTURAL MODULE 3

(CHEMICAL & HYDROCARBON EMERGENCY SIMULATION)

1. **General:** The Chemicals & Hydrocarbon Emergency handling facilities are proposed with a view of train officer in dealing with emergency arising due to spills, leaks / hazardous / flammable liquids with or without fire, gas fires, etc. and including high pressure releases, jet fires, two-phase flows:

Large pool

Storage tank

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Tank Truck

Distillation column

Motor Driven Pump (pump seal failure module)

Horizontal & Vertical flange

Day Service Fuel tanks

2. **Construction:** All the modules shall be erected on reinforced concrete foundation adequate to withstand the load. The concrete shall be treated for minimum 4 hour fire rating.

The function and construction detail of each module is detailed as below.

3. **Large Pool:** Liquid petroleum poses a high risk forming a pool on ground on release from its containment. Such 2-dimensional fires can be fought with various techniques by application of Dry Chemical Powder and /or foam. This fire fighting technique is depicted through a large pool tray module.

The size of large pool tray shall be 10 m X 5 m X 1 m. One end of the tray shall have foam run-down plate of 3 m X 3 m for demonstration of foam application technique on 2-D fires.

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The pool tray shall have liquid fuel feed line of 2" size connected to the inlet nozzle with isolation valve and a fire brigade inlet (male instantaneous breeching) nozzle. A drain pipe of 3" size shall be tapped from bottom of the tray with isolation valve and shall be terminated to the Oily water sewer.

The material of Construction of the tray shall be carbon steel. The CS plate used for construction of tray shall be 10 mm thick or alternatively it shall be made of R.C.C. with plastic lining underneath.

- 4. Storage Tank:** Storage tank farm housing various types of storage tanks for storing crude, intermediate products and finished products is proposed for imparting training on handling of tank fires. This module would demonstrate how a tank fire behaves w.r.t smoke, boil over, slop over etc. The typical fire protection measures like foam pourer system, water spray system etc. would demonstrate how the tank fires are tackled.

The open top storage tank is of 5 meters ID and 5 meters height to demonstrate full surface fire. The cross section of tank is cut from top 1/3rd portion (perimeter of 120 deg.) up to a height of 2 meters from top. These shall be made of carbon steel.

The open top foam pourer system shall be installed with maker/pourer with foam solution application rate 4.1 lpm/m² of oil surface area. Foam pourer shall comply the use of AFFF / FFFP 3% foam concentrate as per NFPA 11.

Deluge water spray system shall be provided as per NFPA 15 for water spray application density of 10.2 lpm/m² of surface area. The deluge valve shall be remotely operated from control room.

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The tank shall have liquid fuel feed line of 2" size connected to the inlet nozzle with isolation valve and a fire brigade inlet (male instantaneous breeching) nozzle. A drain pipe of 3" size shall be tapped from bottom shall of the tank with isolation valve and shall be terminated to the Oily water sewer.

- 5. Tank Truck:** Tank trucks are one of the hydrocarbon transportation means widely in use all over the world. The hazards involved in tank trucks transportation is leakage of hydrocarbon both liquid / gaseous followed immediate or delayed ignition. The consequences associated with such hazards vary depending the location of incident like at the filling point/gantry within the refinery premises or at the cross country/high ways.

This module would give hands-on experience for the trainees on tackling such incidents with application of specific strategy.

Pressurised LPG bullet with dish ends on both sides with design pressure of 20 kg/cm² of size 1.0 meters dia. and 2.0 meters length having PVRV of adequate size filled on top portion. The horizontal bullet shall be mounted a suitable vehicle chassis.

A 2" dia liquid fuel feed and a 1½" dia. gas fuel feed line shall be connected to a manifold with isolation valve and check valves to ensure that either of fuel does not migrate in other line. The nozzle connection shall be so arranged that, at a given point of time, any of fuel type or both can be simulated for release and fire situations.

The bullet module shall have a fire brigade inlet (male instantaneous breeching) nozzle and a drain pipe of 3" size shall be tapped from bottom of the bullet with isolation valve and shall be terminated to the Oily water sewer. These tanks shall be made of carbon steel.

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The wheels/tyres of the tank trucks shall have adequate anchoring to the ground so that, movement of the tank truck do not snap the piping connections.

6. **Distillation column:** the distillation/fractionators column for processing the raw material into an intermediate/finished product posed threat of release of hot hydrocarbon at heights above its auto-ignition temperature resulting in falling flames and 3-dimensional fires. A combination of different techniques needs to be adopted for tackling such fires.

Distillation column shall be made of carbon steel construction. The column shall be 2.0 meters dia. meters and 10 meters in height with three product draw-off connection, each at bottom, middle and top portion of the column. Each product draw-off pipe shall be 6' diameter at the top dish end portion of the column, a PVRV (1 ½ "size) shall be provided to simulate release of lighter ends & associated jet fire. Simulation of both liquid & gaseous hydrocarbon & associated fire shall also be through flange connection of each draw-off points.

The column module shall have a fire brigade inlet (male instantaneous breeching) nozzle and a drain pipe 3" size shall be tapped from bottom of the column with isolation valve and shall be terminated to the Oily water sewer.

The column shall be surrounded by a concrete structure with access a stairs form minimum two sides, diagonally opposite to teach other for accessing up to the top of the column. The product draw-off lines shall run on the concrete structure to depict a pipe rack.

7. **Motor Driven Pump:** This is proposed to demonstrate pump seal failures resulting in release of petroleum/chemical with or without ignition. This module would provide a hands-on training to the trainees to tackle both 2-D fires as well 3-D fires.

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A centrifugal pump, suitable for hydrocarbon service fitted with a prime mover (dummy) motor. The fuel feed line of 2" size shall be connected to the pump suction inlet with an isolation valve. Simulation of leak shall be through a mechanical seal assembly.

A PRV of 1" size shall be connected to the pump casing on top portion to simulate simultaneous jet fire through PRV.

8. **Horizontal & Vertical flange:** This facility aims at demonstrating flange leaks/gasket failures. This being most credible scenario poses a great risk, if the leak is through a high pressure line. Simulation of leak through both vertical & horizontal flanges in a particular section of pipeline throws a challenge to fire fighters, which generally termed as a Christmas tree simulator.

This module is simulated for both liquid & gaseous hydrocarbons releases individually or simultaneously.

A 2" dia liquid fuel feed line and a 1 ½ "dia. gas fuel feed line shall be connected to a manifold with isolation valve and check valves to ensure that either of fuel do not migrate in other line. The nozzle connection shall be so arranged that, at a given point of time, any of fuel type or both can be simulated for release and fire situations.

9. **Day Service Fuel Tanks:** The training ground modules require uninterrupted fuel supply for simulating various leak/fire scenarios. The college curriculum requires three sessions of hands-on training per day. Based on fuel consumption experience for such hands-on practical training, following facilities for fuel supply is required.

Both the liquid fuel tank and gas bank shall be located at safe location away from the training simulators.

10. **Liquid Fuel Tank:** A horizontal storage tank made of carbon steel of suitable size, preferable 50,000 liters capacity fuel tank shall be provided for conduct of practical training session to provide hands-on training to each & every trainee. The tank shall have filling

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manhole/hard piping for filling the fuel tank. If the filling is through a manhole, the tank shall not splash fill. A funnel with filling hose shall be used with filling hose extended up to bottom of the tank.

The fuel tank shall have adequately sized vapor (goose neck) vent with flame arrestor wire mesh fitted at the outlet. The outlet of vapor vent shall be at least 5 meters height from the grade level.

Supply of liquid fuel to various simulators shall be through water pressure. For pressurisation of fuel tank, a 2" line tapped from fire water network shall be connected at the bottom of the fuel tank. Fire water shall act as an expellant and ensure supply of fuel to various simulators at network pressure.

The fuel tank shall be fitted with 3" drain point tapped from the bottom of the tank duly terminated at OWS.

11. **Gas Bank:** Gas bank shall consist of battery of 8 (eight) gas cylinders (industrial grade) connected to a manifold for onward supply through a 1 ½ " piping.
12. **Computer aided simulators:** All simulator modules shall have automation for regulating the simulation from the control room. All such control shall be integrated through computer aided software with redundancy in operation.
13. **Spacing of simulators:** In view of hot training being performed at the fire training ground, there is a possibility of cascading effect on the surrounding modules due to the heat radiation or impinging flames from adjacent module. Hence it is very essential to ensure an adequate spacing between each module. Spacing between each module should be worked out either as per Petroleum Rules or as per IS 15394.

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The spacing distance between modules, thus worked out as above can be adopted for construction. However, spacing between each module shall not be less than 15 meters. (Fire breaks distance).

14. **Waste disposal:** Each session of practical fire training is expected to generate oily water of around 100 m³. This needs to be properly handled and treated so that soil contamination problems are taken care of. Surface drains and Oily water catch pits shall be provided at all possible water application areas and collected oil water shall be directed to an API separator for separating oil & water.

API discharge water shall be planned to be re-circulated to fire water reservoir. Separated oil can be re-circulated into fuel tank.

B. Scope of Work

Consultant will be hired to undertake following key activities.

1. Collect all relevant information and data required for the project.
2. Preparation of drawings, Design, Layout etc. of all Field training Modules buildings and installations in and around buildings.
3. Preparation of working drawings, structural design and drawings, water supply system, disposal waste water and effluents system, recycling of used water during training activity.
4. Preparation of Bill of Quantities of all buildings and installations in and around buildings
5. To prepare the list of equipments and appliances required and their Specifications, Bill Of Quantities, cost and source of availability.
6. Supervision of construction work of field training buildings and installations in and around buildings.
7. To provide trial run of field training modules and get it certified from third party as per client's wish.
8. To prepare Standard Operating Procedure and guidelines, maintenance schedule, and other documentation.

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- 9. Preparation of training courses on each modules and course contents for 31 proposed courses and Training of Trainers.
- 10. Evaluation of First Training Batch.
- 11. To review the existing specifications of equipments and appliances proposed for procurement by the Director, NFSC for utilization.

C. Team Composition

	Expert	Required Experience and Qualification	Minimum Experience (Years)	Indicative Input (Months)
1	Team Leader – Institutional Development Specialist	Team Leader should have leadership qualities and demonstrated experience in comprehensive planning, design, and supervision of Construction, Installation and Commissioning of Field Training Modules of Rescue, Fire Fighting and Emergency Services and preparation of training courses on each modules and course contents for proposed courses in India and/or abroad. He should have handled at least 2 project of similar magnitude	15.0	12.0
2	Architect	Architect should have enough experience and knowledge to design similar type of projects.	15.0	12.0
3	Structural Engineer	Structural Engineer should have enough experience and knowledge to design similar type of projects.	10.0	15.0

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4	Trainer	Trainer should have enough experience and knowledge to train the service personnel to give the best training to the trainees.	10.0	15.0
5	Course Designer	Course Designer should have enough qualification, experience and knowledge to design the course content.	8.0	15.0
6	The Fire and Emergency Equipment Specialist	The Fire and Emergency Equipment Specialist should have in depth knowledge of various fire and emergency equipments and their application for various hazards. He should also have an experience in dealing with procurement of such equipments.	15.0	12.0
7	Resident Architect/Engineer	The Resident Architect / Engineer should have degree in Architecture / Civil Engineering having qualification / knowledge of fire prevention (Passive Fire Protection).	15.0	

E. Time Frame, Deliverables & Payment Schedule

1. The Project will be executed in two parts. First part will be buildings and second part will be installation of equipments of Field Training Modules. The Project will be completed within 21 months from the date of start i.e. 1st July 2011 till March 2013. The deliverables and Payment Schedule is given in **Table 1**.

Table 1: Deliverables and Payment Schedule

Stages	Expected output/ Contents	Submission/completion schedule from the start of assignment	Payment schedule (% of total fees)
-	At the time of agreement / work order	-	10% - Mobilization advance against bank guarantee
BUILDING DESIGN AND CONSTRUCTION			
Phase I			
Preliminary Design stage	Collection of data and preparation of preliminary design and get it approved by the client	End of 3 rd Month	10% - on approval of all preliminary design
Proposal Stage	Preparation of proposal (design and drawings) and get it approved from local authority	End of 4 th Month	10% on submission of sanctioned plan
Phase II			
Working Drawing stage	Preparation of Working Drawings and Bill of Quantity	End of 6 th Month	40% on submission of Working Drawing and BOQ
Phase III			
Construction stage	Preparation of Tender Documents and selection of contractors in association with CPWD	End of 7 th Month	10% on getting construction work started
Supervision stage	Supervising the work during construction of the Training Modules Buildings	End of 14 th Month	20% in stages as per work progress
INSTALLATION OF FIRE FIGHTING TRAINING EQUIPMENTS AND PREPARATION OF TRAINING COURSES			
Phase I			

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Stages	Expected output/ Contents	Submission/completion schedule from the start of assignment	Payment schedule (% of total fees)
-	At the time of agreement / work order	-	10% - Mobilization advance against bank guarantee
Layout and BOQ stage	Preparation of Layout and Bill of Quantity of equipment to be installed in and around the Field Training Modules buildings	End of 15 th Month	20% on submission of Working Drawing and BOQ
Procurement of equipments	Preparation of Tender Documents and selection of suppliers/installers	End of 16 th Month	10% on getting installation work started
Installation stage	Supervision of installations	End of 19 th Month	40% during installation work (in stages)
Trial stage	Giving trial of all training modules and getting satisfactory certification.	End of 20 th Month	20% on satisfactory trial run
Phase II			
Drafting of Training Course	Preparation of Training courses on each modules and course contents for 31 proposed courses and get it approved from the client	End of 21 st Month	10% on approval of Final Report