

PHILIPPINE BIDDING DOCUMENTS

Supply, Delivery and Maintenance of Eight (8) units 6x6 Aircraft Rescue and Firefighting (ARFF) Vehicles

Government of the Republic of the Philippines

BID NO. 24-033-06 BRAVO

**Sixth Edition
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Glossary of Acronyms, Terms, and Abbreviations

ABC – Approved Budget for the Contract.

BAC – Bids and Awards Committee.

Bid – A signed offer or proposal to undertake a contract submitted by a bidder in response to and in consonance with the requirements of the bidding documents. Also referred to as *Proposal* and *Tender*. (2016 revised IRR, Section 5[c])

Bidder – Refers to a contractor, manufacturer, supplier, distributor and/or consultant who submits a bid in response to the requirements of the Bidding Documents. (2016 revised IRR, Section 5[d])

Bidding Documents – The documents issued by the Procuring Entity as the bases for bids, furnishing all information necessary for a prospective bidder to prepare a bid for the Goods, Infrastructure Projects, and/or Consulting Services required by the Procuring Entity. (2016 revised IRR, Section 5[e])

BIR – Bureau of Internal Revenue.

BSP – Bangko Sentral ng Pilipinas.

Consulting Services – Refer to services for Infrastructure Projects and other types of projects or activities of the GOP requiring adequate external technical and professional expertise that are beyond the capability and/or capacity of the GOP to undertake such as, but not limited to: (i) advisory and review services; (ii) pre-investment or feasibility studies; (iii) design; (iv) construction supervision; (v) management and related services; and (vi) other technical services or special studies. (2016 revised IRR, Section 5[i])

CDA - Cooperative Development Authority.

Contract – Refers to the agreement entered into between the Procuring Entity and the Supplier or Manufacturer or Distributor or Service Provider for procurement of Goods and Services; Contractor for Procurement of Infrastructure Projects; or Consultant or Consulting Firm for Procurement of Consulting Services; as the case may be, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

CIF – Cost Insurance and Freight.

CIP – Carriage and Insurance Paid.

CPI – Consumer Price Index.

DDP – Refers to the quoted price of the Goods, which means “delivered duty paid.”

DTI – Department of Trade and Industry.

EXW – Ex works.

FCA – “Free Carrier” shipping point.

FOB – “Free on Board” shipping point.

Foreign-funded Procurement or Foreign-Assisted Project– Refers to procurement whose funding source is from a foreign government, foreign or international financing institution as specified in the Treaty or International or Executive Agreement. (2016 revised IRR, Section 5[b]).

Framework Agreement – Refers to a written agreement between a procuring entity and a supplier or service provider that identifies the terms and conditions, under which specific purchases, otherwise known as “Call-Offs,” are made for the duration of the agreement. It is in the nature of an option contract between the procuring entity and the bidder(s) granting the procuring entity the option to either place an order for any of the goods or services identified in the Framework Agreement List or not buy at all, within a minimum period of one (1) year to a maximum period of three (3) years. (GPPB Resolution No. 27-2019)

GFI – Government Financial Institution.

GOCC – Government-owned and/or –controlled corporation.

Goods – Refer to all items, supplies, materials and general support services, except Consulting Services and Infrastructure Projects, which may be needed in the transaction of public businesses or in the pursuit of any government undertaking, project or activity, whether in the nature of equipment, furniture, stationery, materials for construction, or personal property of any kind, including non-personal or contractual services such as the repair and maintenance of equipment and furniture, as well as trucking, hauling, janitorial, security, and related or analogous services, as well as procurement of materials and supplies provided by the Procuring Entity for such services. The term “related” or “analogous services” shall include, but is not limited to, lease or purchase of office space, media advertisements, health maintenance services, and other services essential to the operation of the Procuring Entity. (2016 revised IRR, Section 5[r])

GOP – Government of the Philippines.

GPPB – Government Procurement Policy Board.

INCOTERMS – International Commercial Terms.

Infrastructure Projects – Include the construction, improvement, rehabilitation, demolition, repair, restoration or maintenance of roads and bridges, railways, airports, seaports, communication facilities, civil works components of information technology projects, irrigation, flood control and drainage, water supply, sanitation, sewerage and solid waste management systems, shore protection, energy/power and electrification facilities, national

buildings, school buildings, hospital buildings, and other related construction projects of the government. Also referred to as *civil works or works*. (2016 revised IRR, Section 5[u])

LGUs – Local Government Units.

NFCC – Net Financial Contracting Capacity.

NGA – National Government Agency.

PhilGEPS - Philippine Government Electronic Procurement System.

Procurement Project – refers to a specific or identified procurement covering goods, infrastructure project or consulting services. A Procurement Project shall be described, detailed, and scheduled in the Project Procurement Management Plan prepared by the agency which shall be consolidated in the procuring entity's Annual Procurement Plan. (GPPB Circular No. 06-2019 dated 17 July 2019)

PSA – Philippine Statistics Authority.

SEC – Securities and Exchange Commission.

SLCC – Single Largest Completed Contract.

Supplier – refers to a citizen, or any corporate body or commercial company duly organized and registered under the laws where it is established, habitually established in business and engaged in the manufacture or sale of the merchandise or performance of the general services covered by his bid. (Item 3.8 of GPPB Resolution No. 13-2019, dated 23 May 2019). Supplier as used in these Bidding Documents may likewise refer to a distributor, manufacturer, contractor, or consultant.

UN – United Nations.

Section I. Invitation to Bid



**INVITATION TO BID FOR – Supply, Delivery and
Maintenance of Eight (8) units 6x6 Aircraft Rescue and
Firefighting (ARFF) Vehicles
BID NO. 24-033-06 BRAVO**

1. The *Civil Aviation Authority of the Philippines*, through the *General Appropriations Act CY 2024* intends to apply the sum of **Php 800,000,000.00** being the ABC to payments under the contract for **BID No. 24-033-06 Bravo**. Bids received in excess of the ABC shall be automatically rejected at bid opening.
2. The *Civil Aviation Authority of the Philippines* now invites bids for the above Procurement Project. Delivery of the Goods is required by Five Hundred Forty (540) calendar days or eighteen (18) months. Bidders should have completed, within the last seven (7) years prior to the date of submission and receipt of bids, a contract similar to the Project. The description of an eligible bidder is contained in the Bidding Documents, particularly, in Section II (Instructions to Bidders).
3. Bidding will be conducted through open competitive bidding procedures using a non-discretionary “*pass/fail*” criterion as specified in the 2016 revised Implementing Rules and Regulations (IRR) of Republic Act (RA) No. 9184.
 - a. Bidding is open to all interested bidders, whether local or foreign, subject to the conditions for eligibility provided in the 2016 revised IRR of RA No. 9184.
4. Prospective Bidders may obtain further information from **BAC Secretariat of CAAP, Mia Road, Pasay City** and inspect the Bidding Documents at the address given below during **office hours from 8:00 A.M to 5:00 P.M. (Monday to Friday)**.
5. A complete set of Bidding Documents may be acquired by interested Bidders on **June 11, 2024 until the deadline of submission of bids** from the given address and website(s) below upon payment of the applicable fee for the Bidding Documents, pursuant to the latest Guidelines issued by the GPPB, in the amount of **Php 84,000.00 (inclusive of 12% VAT)**. The Procuring Entity shall allow the bidder to present its proof of payment for the fees **presenting the official receipt in person/through email**.

[NOTE: For lot procurement, the maximum fee for the Bidding Documents for each lot shall be based on its ABC, in accordance with the Guidelines issued by the GPPB; provided that the total fees for the Bidding Documents of all lots shall not exceed the maximum fee prescribed in the Guidelines for the sum of the ABC of all lots.]

6. The **CAAP** will hold a Pre-Bid Conference¹ on **June 21, 2024 @ 9:30 AM** through video conferencing or webcasting *via Google Meet* which shall be open to prospective bidders, who will coordinate with the Bac Secretariat for the Google Meet link.
7. Bids must be duly received by the BAC Secretariat through manual submission at the office address indicated below, on or before **July 03, 2024 @ 9:30 AM**. Late bids shall not be accepted.
8. All Bids must be accompanied by a bid security in any of the acceptable forms and in the amount stated in **ITB** Clause 14.
9. Bid opening shall be **on July 03, 2024 @ 9:30 AM** at the given address below and/or via Conferencing Google Meet application. Bids will be opened in the presence of the bidders' representatives who choose to attend the activity.
10. The **CAAP** reserves the right to reject any and all bids, declare a failure of bidding, or not award the contract at any time prior to contract award in accordance with Sections 35.6 and 41 of the 2016 revised IRR of RA No. 9184, without thereby incurring any liability to the affected bidder or bidders.

11. For further information, please refer to:

ENGR. LEANDRO R. VARQUEZ

Head, BAC Secretariat

BAC Office

3rd Floor Supply, Procurement Building

CAAP Compound, MIA Road

Corner Ninoy Aquino Avenue, 1300 Pasay City

Telephone No. (02) 8246-4988 loc. 2236

Website: www.bac@caap.gov.ph

12. You may visit the following websites:

For downloading of Bidding Documents: <https://www.philgeps.gov.ph>
<https://www.caap.gov.ph>

ATTY. DANJUN G. LUCAS
Chairperson- BAC Bravo

¹ May be deleted in case the ABC is less than One Million Pesos (PhP1,000,000) where the Procuring Entity may not hold a Pre-Bid Conference.

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, CAAP wishes to receive Bids for the **Supply, Delivery and Maintenance of Eight (8) units 6x6 Aircraft Rescue and Firefighting (ARFF) Vehicles** with identification number **Bid No. 24-033-06 Bravo**.

The Procurement Project (referred to herein as “Project”) is composed of **One (1) Lot**, the details of which are described in Section VII (Technical Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for *General Appropriations Act CY 2024* in the amount of **Php 800,000,000.00**.

2.2. The source of funding is:

- a. NGA, the General Appropriations Act or Special Appropriations.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or **IB** by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex “I” of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

- 5.2. Foreign ownership limited to those allowed under the rules may participate in this Project.
- 5.3. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which, adjusted to current prices using the PSA's CPI, must be at least equivalent to:
 - a. For procurement where the Procuring Entity has determined, after the conduct of market research, that imposition of either (a) or (b) will likely result to failure of bidding that will defeat the purpose of public bidding: the Bidder should comply with the following requirements:
 - i. Completed at least two (2) similar contracts, the aggregate amount of which should be equivalent to at least *fifty percent (50%)* of the ABC for this Project; and
 - ii. The largest of these similar contracts must be equivalent to at least half of the percentage of the ABC as required above.
- 5.4. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

7. Subcontracts

- 7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than twenty percent (20%) of the Project.

The Procuring Entity has prescribed that:

- a. Subcontracting is not allowed.
- 7.2. Subcontracting of any portion of the Project does not relieve the Supplier of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Supplier's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting as indicated in paragraph 6 of the **IB**.

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents comprising the Bid: Eligibility and Technical Components

- 10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 10.2. The Bidder's SLCC as indicated in **ITB** Clause 5.3 should have been completed within the last seven (7) years prior to the deadline for the submission and receipt of bids.
- 10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

11. Documents comprising the Bid: Financial Component

- 11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.
- 11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.
- 11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.
- 11.4. For Foreign-funded Procurement, a ceiling may be applied to bid prices provided the conditions are met under Section 31.2 of the 2016 revised IRR of RA No. 9184.

12. Bid Prices

- 12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:

- a. For Goods offered from within the Procuring Entity's country:
 - i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);
 - ii. The cost of all customs duties and sales and other taxes already paid or payable;
 - iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and
 - iv. The price of other (incidental) services, if any, listed in the **BDS**.
- b. For Goods offered from abroad:
 - i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.
 - ii. The price of other (incidental) services, if any, as listed in the **BDS**.

13. Bid and Payment Currencies

- 13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.
- 13.2. Payment of the contract price shall be made in:
 - a. Philippine Pesos.

14. Bid Security

- 14.1. The Bidder shall submit a Bid Securing Declaration² or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.
- 14.2. The Bid and bid security shall be valid until *see Clause 14.2 of BDS*. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

² In the case of Framework Agreement, the undertaking shall refer to entering into contract with the Procuring Entity and furnishing of the performance security or the performance securing declaration within ten (10) calendar days from receipt of Notice to Execute Framework Agreement.

15. Sealing and Marking of Bids

Each Bidder shall submit one copy of the first and second components of its Bid.

The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

If the Procuring Entity allows the submission of bids through online submission or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

16.1. The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 7 of the **IB**.

17. Opening and Preliminary Examination of Bids

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

18. Domestic Preference

18.1. The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring Entity's BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*," using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 14 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder.

19.4. The Project shall be awarded as follows:

One Project having several items that shall be awarded as one contract.

19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABCs for all the lots or items participated in by the prospective Bidder. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

20. Post-Qualification

20.2. Within a non-extendible period of five (5) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

21. Signing of the Contract

21.1. The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

Bid Data Sheet

ITB Clause	
5.3	<p>For this purpose, contracts similar to the Project shall be:</p> <ul style="list-style-type: none"> a. Supply and Delivery of brand-new Aircraft Rescue and Firefighting (ARFF) Vehicles. b. completed within the last seven (7) years prior to the deadline for the submission and receipt of bids.
7.1	Subcontracting is not allowed.
12	The price of the Goods shall be quoted DDP (See Section VI. Schedule of Requirements) or the applicable International Commercial Terms (INCOTERMS) for this Project.
14.1	<p>The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts:</p> <ul style="list-style-type: none"> a. The amount of not less than Php 16,000,000.00, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less than Php 40,000,000.00 if bid security is in Surety Bond.
19.3	<p>EIGHT HUNDRED MILLION PESOS (Php 800,000,000.00) being the ABC to payments under the contract for SUPPLY, DELIVERY AND MAINTENANCE OF EIGHT (8) UNITS 6X6 ARFF VEHICLES FOR VARIOUS AIRPORTS</p>
20.2	<p>The Bidder with the Lowest Calculated Bid (LCB) that complies with and is responsive to all the requirements and conditions shall submit its</p> <ul style="list-style-type: none"> a) Updated Valid PhilGEPS Certificate of Registration; b) Latest income and business tax returns filed through the Electronic Filing and Payment System (EFPS); c) Business Licenses and Permits required by law (Registration Certificate, Mayor's Permit, Tax Clearance & PCAB License); and d) Latest Audited Financial Statements; and e) Exclusive distributorship or authorized distributorship of the ARFF vehicle certified and duly authenticated by Philippine Consulate in the country of origin; and f) Documentary evidence that the Supplier have a service center or provider counterpart authorized by the Original Equipment Manufacturer (OEM) located in the Philippines and registered with the Securities Exchange

	<p>Commission (SEC); and</p> <p>g) Manufacturer’s compliance certification that the ARFF vehicles to be supplied meet the latest standards of any of the following: ICAO, NFPA 414- 2020 latest edition and FAA, as may be applicable; and</p> <p>h) Brochure containing the detailed technical description of its ARFF vehicles; and</p> <p>i) Certification that the ARFF vehicles to be offered are compliant with CAAP’s technical requirements under this TOR. (Annex “F” Form 4); and</p> <p>j) Certificate of Good Standing from the End-user/s of previously delivered ARFF vehicles; and</p> <p>k) Proof of compliance stating that the Cab of the offered vehicle meets the requirement of one of the following sets of standards (NFPA 414-2020, 4.12.3.6):</p> <ol style="list-style-type: none"> 1) SAE J2420, COE Frontal Strength Evaluation – Dynamic Loading Heavy Trucks, and SAE J2422, Cab Roof Strength Evaluation – Quasi-Static Loading Heavy Trucks; or 2) ECE Regulation number 29, Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle <p>Failure to submit the above requirements within the specified period or a finding against the veracity of the same shall be a ground for immediate disqualification.</p>
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Section IV. General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract (SCC)**.

2. Advance Payment and Terms of Payment

2.1. Advance payment of the contract amount is provided under Annex “D” of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

3. Performance Security

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184.

4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC, Section VII (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

5. Warranty

- 5.1 In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.
- 5.2 The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

6. Liability of the Supplier

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

Section V. Special Conditions of Contract

Special Conditions of Contract

GCC Clause	
1	<p>Warranty Provisions – (as stipulated in Section VII of TOR)</p> <ol style="list-style-type: none"> 1. Winning bidder shall provide a warranty of five (5) years for parts, labor, and maintenance of the delivered ARFF vehicles which shall be covered by a special bank guarantee equivalent to five percent (5%) of the total Contract Price. The said amount shall be released after the lapse of the 5-year warranty period, provided that all the terms and conditions imposed under this TOR have been fully met by the winning bidder. 2. Comprehensive Full Vehicle Warranty <ol style="list-style-type: none"> A. Coverage <p>Each vehicle shall have a full warranty period of five (5) years, counting from the date of registration of the vehicle.</p> <p>During this 5-year comprehensive warranty period, the winning bidder undertakes to ensure the good condition of the vehicles, for them to serve the purpose for which they are intended.</p> <p>The scope of this comprehensive warranty will include preventive and corrective maintenance of the vehicle, as well as the replacement and/or modification of defective elements, all free of charge to CAAP and within the set period of 5 years.</p> <p>The comprehensive warranty includes the following works:</p> <ul style="list-style-type: none"> ➤ Preventive conservation work ➤ Corrective maintenance work ➤ Adaptation works due to technological progress ➤ Extraordinary work <p>This work will be carried out under the following conditions:</p> <ul style="list-style-type: none"> • During the period of validity of the comprehensive warranty, the winning bidder undertakes to take all the measures and carry out the necessary preventive or corrective work to ensure that the vehicles are in perfect working order and operability. • The winning bidder will provide all the human and material resources of its own or partially subcontracted to be able to carry out the fulfillment and development of the works included in the

comprehensive guarantee of the vehicles, regardless of the means available to the Airports.

- The winning bidder must bear in mind that it will carry out all preventive and corrective maintenance work throughout the comprehensive warranty period, always including labor, travel to the airport and maintenance of technical staff, as well as all the spare parts, parts and consumables necessary (oils, filters, lubricants, etc.) to carry out these operations in accordance with the instructions. Replacement periods (due to time or mileage), spare parts and consumables established by the manufacturer and no spare parts other than those stipulated by the manufacturer are accepted under any circumstances.
- In general, preventive and corrective work on the vehicle will be carried out at the airport unless there is a force majeure event that requires the vehicle to be transferred to a workshop. In this case, if the vehicle is unable to travel by its own means, the transfer of the vehicle will be carried out and paid for by the winning bidder with the consent of the airport management.
- The winning bidder will be responsible for the formalities and costs of access to the airport grounds (obtaining accreditation cards) and the costs of daily vehicle insurance in case it is necessary to access the air side with a workshop vehicle.
- In the event that it is not possible to complete all the established works due to lack of resources, all the necessary visits will be carried out until the works are completed, all at no cost to CAAP.
- The removal of all generated waste and consumables from the airport will be the responsibility of the winning bidder.
- The winning bidder shall undertake to guarantee the vehicle supplied by it against any malfunction or breakdown attributable to defects in the manufacture or design of the vehicle, both in the systems built by it and those purchased or subcontracted.
- In the event of repetitive breakdowns caused by design or manufacturing errors during the term of the comprehensive warranty, the winning bidder shall establish the necessary means to correct the error.
- In the event of an agreement being established between the winning bidder and CAAP to carry out a one-off repair within the full warranty period, CAAP may carry out the repair of the vehicle in a workshop agreed with the winning bidder, charging all repair costs to the winning bidder. Under no circumstances will CAAP be held liable for any damage caused as a result of the repair work carried out on the equipment.

- In the event that a breakdown during the comprehensive warranty period is not rectified without a clearly justified cause within a maximum period of one month from the date of notification of the breakdown by the Airport, CAAP may carry out the repair of the fault in the workshop it deems appropriate without it being necessary to agree with the winning bidder, charging all repair costs to the winning bidder. Under no circumstances will CAAP be held liable for any damage caused as a result of the repair work carried out on the equipment.
- The winning bidder undertakes to have a computer application as the main management tool in which all the maintenance work carried out on each vehicle is recorded and to update them when modifications are made. The information managed or generated will be available to CAAP upon request.
- In the event of non-compliance with any of the conditions indicated above, the winning bidder will be subject to Liquidated Damages as described in Section VI of this TOR.
- Labor shall include minor and major repairs such as, but not limited to, diagnostic and troubleshooting repairs, and replacement of fast-moving items, spare parts, and/or major components to be provided to CAAP at no additional cost to the latter within the warranty period.
- CAAP shall promptly notify the winning bidder in writing of any claims arising against the warranty. Upon receipt of such notice, maintenance and/or minor repairs shall be performed by the winning bidder within three (3) days, while major repairs shall be performed within thirty (30) days from notification.

B. Work not included in the Comprehensive Warranty Period

1. During the comprehensive warranty period, the following works will be exempt:
 - Repair of damage caused to the vehicle due to negligent use, vandalism or improper use of the vehicle;
 - All oils, fluids, greases, coolants that have been used by the airport for refilling and checking levels in the vehicle outside of its periodic inspections;
 - Changing Tires;
 - Change of vehicle batteries unless their damage or wear has been caused by the breakdown of another component of the vehicle;

- Change of cabin windows due to negligent blows by CAAP personnel;
- The daily and weekly inspections that are carried out at the airport's Fire Station as a regular routine of the service established by CAAP;
- Repair of sheet metal and paint blows on the bodywork; Replacement or modification of vinyls, anagrams or logos on the outside of the bodywork unless they are damaged due to being defective from the outset;
- Repairs to the vehicle due to accident or total loss;
- Repair of damage to the vehicle caused by adverse weather conditions such as strong winds, rain, floods or hail;
- Exterior and interior cleaning of the vehicle as well as equipment and tools;
- Repairs to communications systems except in the event of a failure that occurs within the warranty period granted by the manufacturer;
- Repairs to the rescue and salvage equipment and tools with which the vehicle is equipped, except in the event of a failure that occurs within the warranty period granted by its manufacturer;
- Replacement of extinguishing agents (water, foam concentrate and chemical powder) that have been used in maintenance, tests or training courses carried out with the vehicle;
- Refilling and Inspections of Nitrogen Cylinders of Powder Equipment;
- The maintenance or repair of the equipment that CAAP incorporates into the vehicle without the authorization of the winning bidder will not be included, unless both parties agree to it;
- Modifications made to the vehicle by the airport that have not been authorized by the manufacturer; and
- Minor repairs that are carried out outside of periodic inspections and that have a cost of less than Php 2,000.00 in parts or less than one hour of work.

C. Preventive Conservation Work

It comprises the set of operations that must be carried out periodically on vehicles, in order to prevent the occurrence of breakdowns, reduce their intensity and extend the useful life of the vehicle under normal working conditions. These works will be:

1. Chassis and gearbox maintenance:

- The preventive maintenance work scheduled by the manufacturer of the chassis and gearbox for those five (5) years will be carried out, including labor, travel to the airport and maintenance of technical staff and all the necessary spare parts, parts and consumables (oils, filters, lubricants, etc.) to carry out these operations according to the manufacturers' instructions.
- A work plan will be delivered with the offer that will include all the works included in the comprehensive guarantee at the established periodicities.
- In each preventive maintenance operation, a forced regeneration of the particulate filter must be carried out if necessary
- Preventive work will be carried out in accordance with the manufacturer's instructions, replacement periods and original new parts, and no spare parts other than those stipulated by the manufacturer will be accepted under any circumstances.
- **Frequency: the visit to all recipient airports shall be mandatory once every six (6) months, until the end of the warranty period.**

2. Maintenance of the fire-fighting installation and bodywork:

- The preventive conservation work scheduled for those five (5) years will be carried out both in the bodywork and in the fire-fighting installation, including labor, displacements and all the necessary consumables (oils, filters, lubricants, etc.) to carry out these operations according to the manufacturers' indications.
- The work plan stipulated by the manufacturer of the fire-fighting installation and bodywork included in the comprehensive warranty will be delivered with the offer with the established periodicities.
- Preventive work will be carried out in accordance with the manufacturer's instructions, replacement periods and original new parts, and no spare parts other than those

stipulated by the manufacturer will be accepted under any circumstances.

- **Frequency: the visit to all recipient airports shall be mandatory once every six (6) months, until the end of the warranty period.**

D. Corrective Maintenance Work

The Winning Bidder undertakes to perform all corrective maintenance work and resolution of breakdowns in the vehicles that are necessary to maintain their full operability, performance and safety during the comprehensive warranty period.

The Winning Bidder may receive notices of breakdowns from the airport every day of the year. Repairs resulting from the preventive work in the previous section may also be subject to this maintenance.

In those cases in which the operability of the vehicle is compromised due to the malfunction of any element of the truck, the response must be in accordance with the response time established in these specifications.

In cases where the breakdown has a serious impact on the operation of the Airport, the winning bidder undertakes to adequately size the human and material resources to reduce the effects of the breakdown and restore normality, until the breakdown in question is completely repaired, and undertakes to apply the response time established in these specifications.

E. Adaptation Work due to Technological Advances

Within the comprehensive warranty period, adaptation work due to manufacturer's service campaigns and bulletins or technological advances that the manufacturer has applied to the vehicle, such as software updates, component replacements due to safety campaigns, or any type of improvement in the vehicle approved by the manufacturer that involves an improvement in its performance, will be included.

Prior to the execution of these works, CAAP shall be informed of its scope for authorization and will not have any additional cost for CAAP.

F. Maintenance Work Carried Out by CAAP

Any maintenance or modification work on the vehicles that the airport wishes to carry out because they are not included in the contract whether with the airport's own resources or subcontracted, must be brought to the attention of the winning bidder and must have

his agreement in order to ensure that the aforementioned works do not affect the design, vehicle warranty and performance.

This work shall be carried out by a company that specializes in the specific work to be carried out, using original components and spare parts from the vehicle manufacturer if necessary in order not to interfere with the warranty of the vehicle.

To this end, the airport will communicate by email to the winning bidder the scope of the work to be carried out so that it can be analyzed and given the go-ahead for its execution. The winning bidder undertakes to provide the technical advice and supply of components that may be necessary for the airport to be able to carry out these works with the greatest diligence and quality.

G. Technical Maintenance Support

The winning bidder will reliably prove that it has its own technical organization in the Philippines, that it is sufficiently sized and capable of attending to the maintenance, overhaul, repair and supply of spare parts for these self-extinguishing vehicles and that it allows the response time established in Section VII.H to be met. This organization may be wholly owned or partially subcontracted.

In the event that a subcontracted company is in charge of maintenance, the vehicle manufacturer must certify the name of the company in Philippines authorized to carry out such maintenance work as well as a certificate that its technical staff has been instructed by the manufacturer in the maintenance of the vehicles and has all the appropriate technical means to do so.

The winning bidder and companies subcontracted for maintenance will have sufficient and adequate technical engineering and material capacity to carry out preventive and corrective maintenance work, without having to be provided with any means by CAAP.

The manufacturer will have its own technical means and facilities or subcontracted facilities in Philippines where it can undertake the maintenance of the vehicles and carry out highly complex repairs to both the fire-fighting installation, as well as the bodywork and the chassis.

The winning bidder or the company subcontracted for maintenance will have in Philippines a complete fault diagnosis and data acquisition equipment to be able to connect it to the vehicle in the event of a breakdown, in order to be able to identify and locate the origin of the incident, as well as to be able to carry out the electronic programming of the different parameters of the vehicle and fire protection installation. If the maintenance company is subcontracted, it will have to be trained in the use of the aforementioned diagnostic

equipment. This diagnostic equipment will have the following functionalities:

- Fault diagnosis.
- Data display from the vehicle's electronic control units.
- Calibration and zeroing of electronic systems.
- Update programming of on-board fire protection systems and main equipment.

The following information must be included for its assessment:

- List of workshops and facilities in Philippines and their location to carry out vehicle maintenance.
- List of mobile repair equipment, workshop vehicles and tools in Philippines of the manufacturer of the fire-fighting installation (personnel and means).
- Own means for the maintenance of the fire-fighting system and bodywork (pump test bench, paint booth, specific tools for the repair of the fire-fighting installation as well as for the repair of water and foam tanks)

H. Response Time

The winning bidder must assume the following response times if incidents occur in the vehicles:

- a. Maintenance and/or minor repairs such as, but not limited to, troubleshooting and replacement of fast moving items/spare parts (fan belts, filters, etc.) – within three (3) days after notification; and
 - b. Major repairs – within thirty (30) days after notification.
- The warranty will also cover the conduct of **minor repairs** (including but not limited to: hydraulic cylinder repairs, fixing minor leaks, ensuring proper function, electrical repairs, addressing minor electrical faults, replacing damaged wires, lubrication of moving parts, joints, bearings and other critical components, belt and chain adjustments, removal and replacement of units, assemblies and subassemblies etc.) and **major repairs** (including but not limited to: component overhauls, repair, welding and fabrication of structural damage, gearbox repair, etc.)
 - In the event that the vehicle has minor defects that do not affect its performance, safety and operability, the winning bidder will

coordinate with the airport to resolve the incidents, providing support to the airport technicians or the maintenance company that is present locally. If the problem still persists, the winning bidder will send a technician to the airport for resolution. These types of failures will have a maximum resolution time of one (1) month.

- In the event of a serious breakdown in a vehicle that renders it out of service, the winning bidder, once it receives the communication from the Airport, will immediately contact the Airport to find out the extent of the breakdown and will proceed to send a technician with appropriate means to the Airport within a maximum period of 72 hours to try to rectify the fault counted from the time of communication from the airport, all at no cost to CAAP.

Any incident that prevents the vehicle from complying with the services required by ICAO, that is out of service and/or that causes a downgrade of the ICAO RFFS category of the Airport is considered a serious breakdown.

I. Technical Support Communications

The winning bidder will establish a communications protocol between the airport and its technical service wherein the steps to be followed in the event of a mechanical incident are established.

Communication channels (contact telephone, e-mail, fax) will be designated for the treatment and management of all aspects related to the preventive and corrective maintenance of vehicles.

The winning bidder shall have a helpline that attends notifications of breakdowns or queries about the operation and maintenance of the self-extinguishing vehicle, and the helpline shall be accessible between 8:00 a.m. and 8:00 p.m. 365 days a year.

J. Spare Parts

The winning bidder will undertake to supply any spare part for this model of vehicle to the CAAP that requests it during a useful life of at least ten (10) years.

Spare parts are included during the equipment warranty period of five (5) years.

The maximum delivery time for any replacement of the components of the bodywork and the fire protection installation of the vehicle will be 15 working days. This aspect must be taken into account by the

bidder and must have a sufficient stock of spare parts to comply with this point.

The winning bidder will provide at all times the material, consumables and spare parts necessary for the correct execution of the comprehensive warranty works. All spare parts must be original, signed by the equipment manufacturer, and new, so no versions or modifications of the original will be accepted and recycled spare parts will not be accepted.

In the event that any component cannot be repaired, the winning bidder undertakes to replace it with one of the same characteristics as the faulty one.

All the spare parts and materials necessary for the total coverage of possible contingencies that may arise from the maintenance and operation of the equipment subject to service are part of this service and must be available, complying with the deadlines defined in this specification.

The transport of all spare parts to the airports is the responsibility of the winning bidder, including defective returns.

It will be the responsibility of the winning bidder to clean and properly store all materials and to keep them in good condition until the termination of the contract.

K. Equipment, Machinery and Waste

The winning bidder will be responsible for all the tools and auxiliary means (light vehicles, vans, cranes, forklifts, ladders, platforms, etc.) necessary for the rapid and correct execution of the works. It will be the responsibility of the winning bidder to transfer personnel, tools and materials to the different service provision areas, as well as their surveillance and custody.

The winning bidder will be responsible for the removal from the airport of all waste generated during maintenance work (oils, filters, packaging, etc.). These works will be carried out by the winning bidder at no additional cost to CAAP, which may require the winning bidder to provide it with a copy of the documents accrediting the correct removal and management of the waste generated by an authorized manager.

Delivery and Documents –

For purposes of the Contract, “EXW,” “FOB,” “FCA,” “CIF,” “CIP,” “DDP” and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows:

For Goods supplied from abroad: “The delivery terms applicable to the Contract are DDP delivered to Various Airports as listed in Section VI. Schedule of Requirements. In accordance with INCOTERMS.”

For Goods supplied from within the Philippines: “The delivery terms applicable to this Contract are delivered to Various Airports as listed in Section VI. Schedule of Requirements. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination.”

Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements).

For purposes of this Clause a list of the Procuring Entity’s Representatives at the Project Sites shall be provided by the End-user.

Incidental Services –

The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements:

- a. performance or supervision of on-site assembly and/or start-up of the supplied Goods;
- b. furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- c. furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- d. performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
- e. training of the Procuring Entity’s personnel, at the Supplier’s plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.
- f. **Refer to Sections VII, VIII and IX of the Terms of Reference.**

The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services.

Spare Parts –

The Supplier is required to provide all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

1. such spare parts as the Procuring Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and
2. in the event of termination of production of the spare parts:
 - i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and
 - ii. following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested.

The spare parts and other components required are listed in **Sections I.9 and I.21 of the Terms of Reference** and the costs thereof are included in the contract price.

The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of ten (10) years.

Spare parts or components shall be supplied as promptly as possible, but in any case, within one (1) month of placing the order.

Packaging –

The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

The packaging, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified below, and in any subsequent instructions ordered by the Procuring Entity.

The outer packaging must be clearly marked on at least four (4) sides as follows:

- Name of the Procuring Entity
- Name of the Supplier

	<p>Contract Description Final Destination Gross weight Any special lifting instructions Any special handling instructions Any relevant HAZCHEM classifications</p>
	<p>A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging.</p> <p>Transportation –</p> <p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price.</p> <p>Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.</p>
	<p>Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure.</p> <p>The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination.</p> <p>Intellectual Property Rights –</p> <p>The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.</p>

2.2	<p>The terms of payment shall be as follows:</p> <ol style="list-style-type: none"> 1. On Contract Signature: Fifteen percent (15%) of the total Contract Price shall, upon submission of a claim for advance payment and the Bank Guarantee as provided in Section I.20 of this TOR, be paid within sixty (60) days from the signing of the Contract which shall remain valid until the Goods are delivered. 2. On Delivery: Sixty percent (60%) of the total Contract Price per vehicle delivered shall be paid to the Supplier within sixty (60) days after the date of receipt of the Goods at the airport of destination and upon submission of required documents by the procuring entity. 3. Acceptance: The remaining twenty percent (20%) of the total Contract Price shall be paid to the Supplier within sixty (60) days after the date of submission of the Acceptance and Inspection Certificate for the complete delivery of the Eight (8) ARFF vehicles to be issued by CAAP's authorized representative. In the event that no Acceptance and Inspection Certificate is issued by CAAP's authorized representative within forty-five (45) days from the date shown on the delivery receipt, the Supplier shall have the right to claim payment of the remaining twenty percent (20%) subject to CAAP's own verification of the reason(s) for the failure to issue the required documents. 4. All progress payments shall first be charged against the advance payment until the latter has been fully exhausted. 5. Five percent (5%) of the total Contract Price shall be covered by a special bank guarantee to cover the Supplier's warranty obligations as provided under this TOR.
4	<p>The inspections and tests that will be conducted are:</p> <p><i>See Sections III and IV of the Terms of Reference.</i></p>

Section VII. Technical Specifications and Terms of Reference

Technical Specifications

Item	Specification	Statement of Compliance
	<p>The Aircraft Rescue and Firefighting Vehicle should be suitable for tropical climate and the body color should be selected from the manufacturer’s standard color by the end-user. Marking shall be in accordance with the End-user’s instruction.</p>	
	<p>ARFF vehicle shall meet or exceed the following standards:</p> <ul style="list-style-type: none"> a. Fully Loaded Vehicle Performance Parameters (SI Units) as specified in Annex B of this TOR; b. Agent System Performance Parameters (SI Units) as specified in Annex C of this TOR; and the c. Minimum characteristics for RFF vehicles as specified in Chapter 5 of ICAO Doc 9137. 	
	<p>2. Chassis</p> <p>The chassis for the ARFF vehicle shall be a 6x6 ARFF Custom-Built Chassis. The ARFF vehicles shall be a minimum of 3 meters and maximum of 3.5 meters in width (excluding mirrors).</p>	
	<p>3. Engine</p> <p>The ARFF vehicle shall be powered by a diesel engine with sufficient horsepower to meet ICAO, NFPA 414 requirements on acceleration and performance for the size vehicle with sufficient cooling system to maintain continuous supply of flow of water circulation with full load operation of the engine at both stationary and maximum speed.</p> <p>The engine shall be rear mounted and shall be provided with tilting or sliding hood or swing type or roller shutter door with sufficient walk-in access to the engine, cooling, and electrical systems for service. Engine shall be Euro 5 Emissions Compliant.</p> <p>3.1 Engine Performance Requirements and Characteristics</p> <p>3.1.1 The vehicle engine(s) shall have the horsepower, torque, and speed characteristics to meet and maintain all vehicular performance characteristics specified in this standard.</p>	

	<p>3.1.2 The engine manufacturer shall certify that the installed engine is approved for this application.</p> <p>3.1.3 The fully loaded vehicle shall be able to accelerate consistently from 0 kph to 80.5 kph (0 mph to 50 mph) on dry, level concrete pavement at the operational airport within 35-40 seconds.</p> <p>3.1.4 The maximum speed shall not be less than 112 kph.</p> <p>3.1.5 The vehicle also shall be capable of ascending, stopping, starting, and continuing ascent on a 40 percent grade on dry pavement at a speed up to at least 1.6 kph (1 mph) with extinguishing agents being discharged from the primary turret nozzle(s).</p> <p>3.2 Engine Cooling Systems</p> <p>3.2.1 An engine coolant preheating device shall be provided as an aid to rapid starting and high initial engine performance.</p> <p>3.2.2 This device shall be fitted with an automatic thermostat.</p> <p>3.2.3 If the engine coolant preheating device requires electrical power from an outside source to operate, a grounded ac receptacle shall be provided to allow a pull-away connection from the local electric power supply to the engine coolant preheating device.</p> <p>3.2.4 The cooling system shall be designed so that the stabilized engine coolant temperature remains within the engine manufacturer's prescribed limits under all operational conditions and at all ambient temperatures (0°C to 43.3°C) that might be encountered at the operational airport.</p> <p>3.2.5 The cooling system shall be provided with an automatic thermostat for rapid engine warming.</p> <p>3.3 Fuel System</p>	
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	<p>3.3.1 A complete fuel system shall be installed with the engine manufacturer's approval.</p> <p>3.3.2 The fuel system shall be protected from the following:</p> <ul style="list-style-type: none"> (1) Damage (2) Exhaust heat (3) Exposure to ground fires (4) Vapor lock <p>3.3.3 Accessible filtration for each fuel supply line and a drain shall be provided at the bottom of the fuel tank.</p> <p>3.3.4 A fuel-water separator equipped with a manual drain shall be supplied where the vehicle is equipped with a diesel-fueled engine.</p> <p>3.3.5 The fuel-water separator shall meet the engine manufacturer's requirements.</p> <p>3.3.6 Fuel tanks shall not be installed in a manner that allows gravity feed.</p> <p>3.4 Exhaust System</p> <p>3.4.1 The exhaust system shall be constructed in such a manner that exhaust discharge is directed away from any operators.</p> <p>3.4.2 The exhaust system shall be of high-grade, rust-resistant materials.</p> <p>3.4.3 The exhaust system shall include a muffler to reduce engine noise.</p> <p>3.4.4 The exhaust system shall be protected from damage that could result from traversing rough terrain.</p> <p>The tailpipe shall not be directed toward the ground.</p>	
	<p>4. Transmission</p>	

	<p>4.1 Transmission of power from the engine to the wheels of the vehicle shall be through an automatic gearbox.</p> <p>4.2 The entire drivetrain shall be designed and rated by the component manufacturer as having the strength to slip the wheels of the static-loaded vehicle on a surface having a coefficient of friction of 0.8.</p> <p>4.3 The transmission shall be approved by its manufacturer for the application.</p> <p>4.4 A transmission cooling system shall be provided and designed so that the stabilized transmission oil temperature remains within the transmission manufacturer's prescribed limits under all operational conditions and at all ambient temperatures encountered at the operational airport.</p> <p>4.5 A positive drive shall be provided to each wheel by means of a fully locked driveline in order to maximize traction on low-friction surfaces.</p> <p>4.5.1 Positive drive either shall be permitted to be achieved by the use of automatic locking and torque proportioning differentials or shall be permitted to be selected manually by the seated driver by use of a single control while the vehicle is in motion.</p> <p>5. Cab</p> <p>The ARFF vehicle shall be two doors with seating capacity of at least four (4) with equivalent SCBA mounting brackets on each seating location, laminated and tinted safety glass windshield shall be provided.</p> <p>Adjustable driver seat and three-point seat belt should be provided, air-conditioning system, two adjustable side mirrors and at least two speed electric windshield wipers should also be provided.</p> <p>The ARFF vehicles shall be a minimum of 3 meters and maximum of 3.5 meters in width (excluding mirrors).</p> <p>5.1 Cab Interior</p> <p>5.1.1 The cab shall be fully enclosed (i.e., floor, roof, and four sides).</p>	
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	<p>5.1.2 Seating for the crew shall be restricted to the cab.</p> <p>5.1.3 As a minimum, at least a total of four (4) seat positions shall be provided.</p> <p>5.1.4 Three-point seat belts equipped with a single hand hookup shall be provided for each of the designated seating positions.</p> <p>5.1.5 Space shall be provided for all instrument controls and equipment specified without hindering the crew.</p> <p>5.1.6 Doors shall be provided on each side of the cab with steps and handrails to allow rapid entrance and exit from the cab while wearing full protective equipment.</p> <p>5.1.7 Each door shall be equipped with a restraint device(s) to prevent the door from being sprung open by wind or jet blast.</p> <p>5.2 Cab Visibility</p> <p>5.2.1 The cab shall meet the visibility requirements of Chapter 4.3.2.2 of NFPA 414 – 2020 Edition.</p> <p>5.2.2 Interior cab reflections from exterior and interior lighting shall be minimized.</p> <p>5.2.3 The windshield shall be shatterproof safety glass.</p> <p>5.2.4 All other windows shall be constructed of safety glass.</p> <p>5.2.5 Where equipped with a primary turret having manual controls above the cab roof, the cab roof shall be designed with a quick access to the primary turret(s).</p> <p>5.3 Cab Construction</p> <p>5.3.1 The cab shall be weatherproof and shall be applied with anti-corrosion treatment.</p> <p>5.3.2 The cab shall be fully insulated thermally and acoustically with a fire-resistant material.</p>	
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	<p>5.3.3 The cab interior noise level at any seated position shall not exceed 85 dBA while the vehicle is being driven at 80.5 kph (50 mph) on a level, hard surface without warning devices operating.</p> <p>5.3.4 While stationary and discharging water or foam from the high-volume turrets with exterior warning devices operating, the maximum noise level inside the cab shall be 90 dBA.</p> <p>5.3.5 The cab shall be permitted to be of the unitized rigid body and frame structure type or a separate unit that is flexibly mounted on the main vehicle frame.</p> <p>5.3.6 Cabs on apparatus with a GVWR greater than 11,800 kg (26,000 lb) shall meet the requirements of one of the following sets of standards:</p> <ul style="list-style-type: none"> (1) SAE J2420, COE Frontal Strength Evaluation — Dynamic Loading Heavy Trucks, and SAE J2422, Cab Roof Strength Evaluation — Quasi-Static Loading Heavy Trucks; or (2) ECE Regulation number 29, Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle <p>5.4 Instruments, Warning Lights, and Controls.</p> <p>5.4.1 The minimum number of instruments, warning lights, and controls consistent with the operation of the vehicle, chassis, and fire-fighting system shall be provided.</p> <p>5.4.2 All chassis instruments and warning lights shall be grouped on a panel in front of the driver.</p> <p>5.4.3 All fire-fighting system instruments, warning lights, and controls shall be grouped by function to provide ready accessibility and high visibility for the driver as well as crew members.</p> <p>5.4.4 All instruments and controls shall be illuminated.</p>	
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	<p>5.4.5 Groupings of both the chassis and the fire-fighting system instruments, warning lights, and controls shall be easily removable as a unit or shall be accessible for servicing.</p> <p>5.4.6 The following instruments and warning lights shall be provided as a minimum:</p> <ul style="list-style-type: none">(1) Speedometer/odometer(2) Engine tachometer(s)(3) Fuel level(4) Air pressure(5) Engine(s) temperature(6) Fire system pressure(7) Water tank level(8) Foam or tank level(9) Low-air pressure warning(10) Headlight beam indicator(11) Engine(s) oil pressure(12) Voltmeter(s)(13) Transmission oil temperature <p>5.4.7 The cab shall have all the following controls within reach of the driver for operation of the vehicle and the pumping system:</p> <ul style="list-style-type: none">(1) Accelerator pedal(2) Brake pedal(3) Parking brake control(4) Steering wheel, with directional signal control and horn(5) Transmission range selector(6) Pump control or selector	
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	<ul style="list-style-type: none"> (7) Foam control (8) Siren switch(es) (9) Bumper turret controls or ground sweep valve control, where specified (10) Undertruck valve control, where specified (11) Remote turret controls, where remote turret is provided (12) Light switches (13) Windshield wipers with delayed and multi speed capability and washer controls (14) Master electrical switch (15) Means of starting and stopping engine (16) Complementary agent pressurization control, where specified (17) Windshield deluge system switch, where specified <p>5.4.8 Where specified, a windshield deluge system shall be designed to flood the windshield with clear water and to be energized automatically whenever the system is operated.</p> <p>5.5 Equipment</p> <p>5.5.1 The following equipment shall be provided in or on the cab, as applicable:</p> <ul style="list-style-type: none"> (1) Driver's suspension seat with vertical, fore, and aft adjustment, with seat belt (2) Crew seats with individual retractable seat belts (3) Windshield washers (4) Windshield wipers (5) Siren 	
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	<ul style="list-style-type: none">(6) Horn(7) A means or provision that is designed to protect driver and crew from overhead glare and light from the sun(8) Outside rearview mirrors(9) Interior lighting(10) Provisions for mounting at each crew seat position self-contained breathing apparatus (SCBA) of the type specified by the purchaser <p>5.6 SCBA Mounting. Where SCBA holders are mounted within a driving or crew compartment, they shall comply with the following:</p> <ul style="list-style-type: none">(1) The SCBA unit is mounted in a seatback, the release mechanism shall be accessible to the user while seated.(2) Each holder shall bear a label affixed by the holder manufacturer certifying compliance to NFPA or EN specifications. <p>5.7 Equipment Mounting</p> <ul style="list-style-type: none">5.7.1 All equipment required to be used during an emergency response shall be securely fastened.5.7.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 g force is applied in the longitudinal axis of the vehicle or a 3 g force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.5.7.3 Signs visible from each seated position that state “Occupants must be seated and wearing a seat belt when apparatus is in motion” shall be provided.	
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	<p>5.7.4 A monitoring and data acquisition system (MADAS) shall be installed for the collection of various performance measurements to monitor, as a minimum, the following:</p> <ol style="list-style-type: none"> (1) Vehicle speed (2) Vehicle heading (3) Lateral acceleration (4) Vertical acceleration (5) Longitudinal acceleration and deceleration (6) Engine rpm (7) Throttle position (8) Steering input (9) Vehicle braking input (pedal position and brake pressure) (10) Date, time, and location for all data collected <p>5.7.5 The data acquisition system shall be capable of storing the measurements and the time intervals, starting at least 120 seconds before and ending at least 15 seconds after any serious incident.</p> <p>5.7.6 The data acquisition system shall be designed so that the data being recorded will not be lost or overwritten immediately after the incident due to the use of an emergency shutoff or a master electrical disconnect switch.</p> <p>5.7.7 If a lateral acceleration indicator is provided, it shall be adjustable for sensitivity and provide both visual and audio warning signals and warnings to the driver.</p>	
	<p>6. Body</p> <p>6.1 The body shall be constructed of materials that are of the lightest weight consistent with the strength necessary for off-pavement operation over rough terrain and exposure</p>	

	<p>to excess heat, and body panels shall be removable where necessary to provide access to the interior of the vehicle.</p> <p>6.2 Access doors shall be provided for those areas of the interior of the vehicle that are inspected frequently, including, but not limited to, the following:</p> <ul style="list-style-type: none"> (1) Engine (2) Pump (3) Foam-proportioning system (4) Battery storage (5) Fluid reservoirs <p>6.3 Compartments for storage of equipment and tools to be carried on the vehicle shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be weather resistant (2) Be self-draining (3) Be lighted <p>6.4 A working deck that is reinforced and constructed of, or covered with, a slip-resistant material shall be provided and shall be reinforced adequately to allow the crew to perform its duties in the primary turret area, cab hatch area, water tank top fill area and foam-liquid top fill area, and in other areas where access to complementary or installed equipment is necessary.</p> <p>6.5 Handrails or bulwarks shall be provided where necessary for the safety and convenience of the crew.</p> <ul style="list-style-type: none"> 6.5.1 Access handrails or handholds shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located. 6.5.2 Exterior access handrails shall be constructed of or covered with a slip-resistant, noncorrosive material. 6.5.3 Exterior access handrails shall be between 25.4 mm and 41.275 mm (1 in. and 15 /8 in.). 	
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	<p>6.6 Steps or ladders shall be provided for access to the top fill area.</p> <p>6.6.1 The lowermost step(s) shall be permitted to extend below the angle of approach or departure or ground clearance limits if it is designed to swing clear.</p> <p>6.6.2 All other steps shall be rigidly constructed and constructed of, or covered with, a slip-resistant material.</p> <p>6.6.3 The lowermost step(s) shall be no more than 558.8 mm (22 in.) above level ground when the vehicle is fully loaded.</p> <p>6.6.4 Lighting shall be provided to illuminate steps and walkways.</p> <p>6.7 A front bumper shall be mounted on the vehicle and secured to the frame structure.</p> <p>6.8 Attachments shall be provided for all tools, equipment, and other items that the purchaser specifies to be furnished on the vehicle.</p> <p>6.8.1 Equipment holders shall be attached and designed so that equipment remains in place under all operating conditions.</p> <p>6.8.2 The equipment holders shall allow the equipment to be readily accessible and removable for use.</p> <p>6.9 Each storage compartment identified by the vehicle manufacturer for use by the purchaser shall be labeled with tested weight.</p> <p>6.10 Compartment loading shall not be exceeded as identified at the time of vehicle manufacture.</p> <p>6.11 Provisions shall be made for mounting tools and equipment, as specified by the purchaser, on the truck.</p> <p>6.11.1 Special tools for servicing the vehicle, fire suppression system, and any of the auxiliary equipment shall be identified specifically by the vehicle manufacturer and furnished as necessary by the vehicle manufacturer.</p>	
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	<p>7. All-Wheel Drive</p> <p>7.1 All-wheel drive on these vehicles shall incorporate a drive to the front and rear axles that is engaged at all times during the intended airport service.</p> <p>7.2 An interaxle differential shall be installed with automatic means or driver-selected means of differential locking.</p> <p>7.3 All traction-increasing devices shall be operated by a single control for driving simplicity.</p>	
	<p>8. Axle and Suspension</p> <p>The ARFF vehicle axles and suspension shall be designed to meet or exceed the requirements of ICAO, FAA and NFPA 414 Standards (2020 Edition).</p> <p>The ARFF vehicle suspension shall be provided an off-road high mobility all-wheel to guarantee superior off-road and high speed paved road capabilities.</p> <p>The ARFF vehicle shall be equipped with power-assisted steering with direct mechanical linkage from the steering wheel to the steered axle(s) to allow manual control in the event of power-assist failure. (NFPA 414, Sec. 4.11.1)</p> <p>8.1 Axle Capacity</p> <p>8.1.1 Front and rear axles shall have the gross axle weight rating (GAWR) capacity to carry the maximum imposed load under all intended operating conditions.</p> <p>8.1.2 The variations in axle track shall not exceed 20 percent of the tire(s) sectional width at rated load.</p> <p>8.2 Suspension. The suspension system shall be designed to allow the loaded vehicle to perform as follows:</p> <ol style="list-style-type: none"> (1) Travel at the specified speeds over improved surface. (2) Travel at moderate speeds over unimproved surface. (3) Provide diagonally opposite wheel motion above ground obstacles without raising the remaining wheels from the ground, in accordance with Annex B of this TOR. 	

	<p>8.3 Prevent damage to the vehicle caused by wheel movement.</p>	
	<p>9. Brake System</p> <p>The braking system shall meet NFPA 414 or equivalent standards.</p> <p>No part of the brake chamber shall project below the axle bowls. The air system shall have the capacity for quick build-up from 0 kPa (0 psi) to release of spring brakes within 15 seconds.</p> <p>9.1 Service brakes shall be of the all-wheel type with split circuits so that failure of one circuit shall not cause total service brake failure.</p> <p>9.1.1 The service brakes shall be capable of holding the fully loaded vehicle on a 50 percent grade.</p> <p>9.1.2 The service brakes shall stop the vehicle within 12.2 m (40 ft) at 32.2 kph (20 mph) and within 48.8 m (160 ft) at 64.4 kph (40 mph).</p> <p>9.1.3 Stopping distances shall be accomplished on a dry, hard, approximately level roadway that is free from loose material and that has a roadway width equal to the vehicle width plus 1.2 m (4 ft) without any part of the vehicle leaving the roadway.</p> <p>9.1.4 For each vehicle, the service brakes shall provide one power-assisted stop while the vehicle engine is inoperative for the stopping distances specified in 9.1.1 through 9.1.3.</p> <p>9.2 The parking brake shall be capable of holding the fully loaded vehicle on a 20 percent grade without air or hydraulic assistance.</p> <p>9.3 Brakes — Air System.</p> <p>9.3.1 Reservoirs shall be equipped with drain valves and safety valves.</p> <p>9.3.2 Provision shall be made for charging of air tanks with either a pull-away electrical connection used to power a vehicle-mounted complementary</p>	

	<p>compressor or a pull-away air connection for charging of air tanks from an external air source.</p> <p>(4) Visual and audible low-air pressure warning devices that are visible and audible to the driver from inside the cab of the vehicle shall be provided.</p>	
	<p>10. Rims, Tire and Wheels</p> <p>The wheels shall all be all wheel drive single tire with left or center steering. The size of the tires should be compatible with the gross weight of the vehicle with full load and maneuvers through adverse terrain; handles high speed turns and stable in side slope conditions.</p> <p>The ARFF vehicle shall be provided with two (2) spare tires and wheel in a serviceable condition. A tire pressure monitor shall also be installed which can be viewed from a screen inside the cab.</p> <p>10.1 Vehicles shall be required to meet the specified paved surface performance while still providing off-pavement performance compatible with the conditions encountered at the operational airport.</p> <p>10.2 A tire selection shall be made that reflects the off-pavement performance requirements necessitated by the soil conditions encountered at the operational airport.</p> <p>10.3 Only new tires shall be mounted on the vehicles.</p> <p>10.4 All wheels shall be of the single-wheel type, with all rims, tires, and wheels of an identical size and the same tire tread design.</p> <p>10.5 Rims, tires, and wheels shall be certified by their respective manufacturers as having the capacity to meet the specified performance.</p> <p>10.5.1 Tires shall be certified by their respective manufacturers for not less than 42.9 km (25 mi) of continuous operation at 96.5 kph (60 mph) when inflated at the operational pressure.</p>	
	<p>11. Water Tank</p> <p>The ARFF vehicle water tank shall be at least 12,500 liters capacity in a non-corrosive maintenance free tank construction with top water fill opening, vent overflow outlet,</p>	

mesh screen, baffle plates and water level gauge. A tank fill/drain of at least 2.5” diameter connection shall also be provided.

11.1 Capacity.

11.1.1 A water tank shall have a usable capacity as specified in Fully Loaded Vehicle Performance Parameters as specified in Annex B of this TOR.

11.1.2 The rated capacity of the tank shall be equal to the usable capacity that can be pumped from the tank while the vehicle is parked on level ground.

11.1.3 The tank outlets shall be arranged to allow the use of at least 85 percent of the rated capacity with the vehicle positioned as follows:

- (1) On a 20 percent side slope
- (2) On a 30 percent ascending grade
- (3) On a 30 percent descending grade

11.2 Construction

11.2.1 The tank shall be constructed to resist all forms of deterioration that could be caused by the water and the foam concentrate while affording the structural integrity necessary for off-road operation.

11.2.2 The tank shall have the following characteristics:

- (1) Be equipped with removable manhole covers over the tank discharge.
- (2) Be designed to allow for internal and external inspection and service.
- (3) Have longitudinal and transverse baffles.
- (4) Have a minimum 63.5 mm (2.5 in.) capacity drain connection installed at the bottom of the sump.

11.2.3 Provisions shall be made for necessary overflow and venting.

	<p>11.2.3.1 Venting shall be sized to allow agent discharge at the maximum design flow rate without danger of tank collapse.</p> <p>11.2.3.2 Vents shall be sized to allow rapid and complete filling without exceeding the internal pressure design limit of the tank.</p> <p>11.2.3.3 Overflows shall be designed to prevent loss of water from the tank during maneuvering and to direct the discharge of overflow water directly to the ground.</p> <p>11.2.3.4 Water tank shall be full at start of tilt-table test.</p> <p>11.2.3.5 Water loss shall be prevented during tilt-table testing.</p> <p>11.2.4 The water tank shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be mounted in a manner that limits the transfer of the torsional strains from the chassis frame to the tank during off-pavement driving. (2) Be separate and distinct from the crew compartment, engine compartment, and chassis. (3) Be able to be removed as a unit. (4) Be permitted to be an integral part of unitized rigid body construction. <p>11.2.5 The water tank shall be equipped with at least one top fill opening of not less than 20.3 cm (8 in.) internal diameter.</p> <p>11.2.5.1 The water tank top fill shall be equipped with an easily removable strainer of 6.4 mm (1/4 in.) mesh construction.</p> <p>11.2.5.2 The water tank top fill opening shall be equipped with a cap designed to prevent spillage.</p>	
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	<p>11.3 Tank Fill Connection(s)</p> <p>11.3.1 A tank fill connection(s) shall be provided in a position where it can be reached easily from the ground.</p> <p>11.3.2 All couplings shall be specified by the purchaser to the standard for the airport.</p> <p>11.3.3 The connection(s) shall be provided with strainers of 6.4 mm (1/4 in.) mesh.</p> <p>11.3.4 The tank fill connection(s) shall be sized to allow filling of the water tank in 2 minutes at a pressure of 551.6 kPa (80 psi) at the tank intake connection.</p> <p>11.4 The tank connections shall have check valves or shall be constructed so that water is not lost from the tank when a connection or disconnection is made.</p>	
	<p>12. Foam Tank</p> <p>The ARFF vehicle foam tank shall be at least 1,500 liters capacity in a non-corrosive maintenance free tank construction with top foam fill opening, vent, overflow outlet, mesh screen, baffle plates and foam level gauge. A tank fill/drain of at least 2.5” diameter shall be provided and located on the side of the apparatus.</p> <p>One hundred percent (100%) capacity of Aqueous Film Form Foam (AFFF) - ICAO Performance Level B must form part of the delivery.</p> <p>12.1 Foam-Liquid Concentrate Tank(s) shall be designed for compatibility with the foam concentrate being used.</p> <p>12.2 Tanks shall be designed to allow for internal and external inspection and service.</p> <p>12.3 The tank outlets shall be located above the bottom of the sump and shall provide continuous foam-liquid concentrate to the foam proportioning system, with that system operating at a) with a means of controlling the ratio of AFFF 3% foam concentrate to the quantity of water in the foam solution being discharged from all orifices used for aircraft firefighting operations; b) proportioning system accurate to provide for the discharge of finished foam within the range specified in Section 5.7.16 of ICAO Doc 9137; c) each nozzle shall</p>	

	<p>have minimum discharge patterns and meet the parameters described in Annex C and with the vehicle discharging two tank loads of usable water.</p> <p>12.4 The foam-liquid tank shall be mounted in a manner that limits the transfer of the torsional strains from the chassis frame to the tank during off-pavement driving.</p> <p>12.4.1 The foam-liquid concentrate tank shall be removable as a unit.</p> <p>12.4.2 Foam-liquid concentrate tanks used as an integral part of unitized rigid body construction shall be permitted.</p> <p>12.4.3 A flexible tank shall be structurally supported to resist tearing independently of the fluid levels in either the water or foam tanks.</p> <p>12.4.4 The structural support shall not be dependent on the fluid level in either the water tank or the foam tank.</p> <p>12.5 A top fill trough shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be equipped with a mesh screen constructed of noncorrosive materials and container openers to allow emptying 18.9 L (5 gal) foam-liquid concentrate containers into the storage tank(s). (2) Be connected to the foam-liquid storage tank(s) with a fill line designed to introduce foam-liquid concentrate to minimize foaming within the storage tank. <p>12.6 The tank fill connection(s) shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be provided in a position where it can be reached, but not exceed 1.5 m (5 ft), from the ground to allow the pumping of foam-liquid concentrate into the storage tank(s). (2) Be provided with strainers of 6.4 mm (1/4 in.) mesh and have check valves or be constructed so that foam is not lost from the tank when a connection or disconnection is made. 	
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	<p>12.7 Where flexible tanks are used, the supply system shall have the following characteristics:</p> <ol style="list-style-type: none"> (1) Be designed so that the flexible tanks are not subject to excess pressure. (2) Be capable of delivering foam-liquid at a rate at least equal to or greater than the maximum discharge rate of the foam system. <p>12.8 The tank(s) shall have the following characteristics:</p> <ol style="list-style-type: none"> (1) Be vented to allow for filling without the buildup of pressure. (2) Allow emptying of the tank at the maximum design flow rate without danger of collapse. (3) Have the vent outlets directed to the ground to prevent spillage of foam-liquid concentrate on vehicle components. <p>12.9 Foam Proportioning System Flushing. The foam-liquid concentrate system shall be arranged so that the entire piping system can be flushed readily with clear water.</p> <p>12.10 Foam-Liquid Concentrate Piping. The foam-liquid concentrate piping shall be of material resistant to corrosion by foam-liquid concentrates.</p> <p>12.10.1 Care shall be taken that combinations of dissimilar metals that produce galvanic corrosion are not selected or that such dissimilar metals are electrically insulated.</p> <p>12.10.2 Where plastic piping is used, it shall be fabricated from unplasticized resins, unless it has been demonstrated that the stipulated plasticizer does not adversely affect the performance characteristics of the foam-liquid concentrates addressed in this standard.</p> <p>12.10.3 The plastic pipe shall be permitted to be reinforced with glass fibers.</p> <p>12.11 The foam-liquid concentrate piping shall be sized to allow the maximum required flow rate.</p>	
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	<p>12.11.1 The foam-liquid concentrate piping shall be arranged to prevent water from entering the foam tank.</p>	
	<p>13. Foam System</p> <p>The ARFF vehicle shall be equipped with an automatic around the pump (ATP) type foam proportioning system. The foam system shall be sufficient for a maximum of 6% foam concentrate.</p> <p>The foam concentrate proportioning system shall provide a means of controlling the ratio of foam concentrate to quantity of water. System shall be preset at 3% setting.</p> <p>13.1 Foam Proportioning Systems. The foam concentrate proportioning system shall provide a means of controlling the ratio of Aqueous Film Forming Foam (AFFF) concentrate to the quantity of water in the foam solution being discharged from all orifices used for aircraft firefighting operations.</p> <p>13.2 The proportioning system shall be accurate to provide for the discharge of finished foam within the range specified in ICAO Doc. 9137, Chapter 5</p> <p>13.3 Each nozzle shall have minimum foam discharge patterns and meet the discharge parameters described in Annex B of this TOR.</p>	
	<p>14. Fire Pump</p> <p>The ARFF vehicle fire pump shall be centrifugal type, single or multi-stage with automatic priming system, stainless steel shaft, bronze body and impellers and cast housing with a minimum pump output of 6,000 lpm.</p> <p>The Water Pump automatic priming system should allow pumping water from an external source.</p> <p>14.1 Agent Pump(s) and Pump Drive</p> <p>14.1.1 Agent Pump(s)</p> <p>14.1.2 The water pump(s) shall be constructed of corrosion-resistant metals of the single-stage or multiple-stage centrifugal type designed for emergency service.</p>	

	<p>14.1.2.1 Pumps shall be gravity primed from the vehicle tank.</p> <p>14.1.2.2 The pump and piping system shall be designed to eliminate the entrapment of air.</p> <p>14.1.3 All proportioning system components shall be made of materials resistant to corrosion by all primary agents.</p> <p>14.1.4 Where discharging foam solution, the pumping system shall be capable of discharging at a rate equal to or exceeding the total requirements of the roof, bumper turret or ground sweep nozzles, handline nozzles, and undertruck nozzles, discharging simultaneously at designed pressures.</p> <p>14.2 Pump Drive</p> <p>14.2.1 The pump(s) drive shall allow operation of the pump(s) and simultaneous operation of the vehicle.</p> <p>14.2.1.1 The pump(s) shall not be affected by changes in transmission ratios or the actuation of clutches in the vehicle drive.</p> <p>14.2.1.2 The design of the drive system and controls shall prevent damage to the drive and minimize lurching of the vehicle when the vehicle drive is engaged during pumping operations.</p> <p>14.2.1.3 The pump(s) drive system shall be capable of absorbing the maximum torque delivered by the engine to the pump(s) and withstanding the engagement of the pump(s) at all engine and vehicle speeds and under all operating conditions.</p> <p>14.2.1.4 The operation of the pump(s) shall not, under any conditions, cause the engine to stall or cause more than a slight and momentary reduction in engine speed and consequent drop in pump pressure.</p>	
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	<p>14.2.2 While pumping at rated capacity, the drive shall allow controlled vehicle operation at speeds equivalent to the vehicle’s maximum speed or “Full Pump and Roll”</p> <p>14.2.2.1 During shifting from forward to rearward drive, the pumping system shall maintain the preset discharge pressure.</p> <p>14.2.2.2 The pump(s) drive shall have the power capacity to provide the pump(s) discharge requirements of a rate equal to or exceeding the total requirements of the roof turret, bumper turret, handline nozzles, and undertruck nozzles, where specified, discharging simultaneously at designed pressures while the vehicle is being propelled under all operating conditions where fire-fighting capability is needed.</p> <p>14.2.3 If an independent engine is used to drive the pump(s), it shall operate with the same fuel and electrical system as the chassis engine.</p> <p>14.3 Tank-to-Pump Connections.</p> <p>14.3.1 The tank-to-pump system shall be designed for flow at the pumping rates equal to or exceeding the total requirements of the roof turret, bumper turret, handline nozzles, and undertruck nozzles, where specified, discharging simultaneously at designed pressures.</p> <p>14.3.2 A drain shall be at the lowest point with a valve for draining all the liquid from the pumping system.</p> <p>14.3.3 Discharge Connections. All couplings shall be specified by the purchaser to the standard for the airport.</p> <p>14.4 Piping, Couplings, and Valves.</p> <p>14.4.1 Union or rubber-gasketed fittings shall be provided where necessary to facilitate removal of piping.</p>	
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	<p>14.4.2 Piping shall be provided with flexible couplings to minimize stress.</p> <p>14.4.3 All valves shall be of the quarter-turn type and shall be selected for ease of operation and freedom from leakage.</p> <p>14.4.4 The tank-to-pump side of the pump piping shall be leak free.</p> <p>14.4.5 All water and foam solution discharge piping, together with the agent pump(s), shall be tested at 50 percent above the system operating pressure.</p> <p>14.5 Overheat Protection. An automatic system with a visual alarm shall be provided to prevent overheating of the pumps while they are engaged and operating at zero discharge.</p> <p>14.6 Pressure Relief Valves. A pressure relief system shall be provided to protect and ensure optimum performance of the system.</p> <p>14.7 Drains. A drainage system shall be provided appropriate for the design of the vehicle.</p>	
	<p>15. Piping</p> <p>15.1 All piping connecting systems are of high-grade stainless steel and special rubber corrosion resistant under overpressure and vacuum conditions.</p>	
	<p>16. Roof Turret with Dry Chemical Nozzle</p> <p>The ARFF vehicle roof turret shall be a power-assisted dual agent turret equipped with a non-aspirating nozzle (corrosion proof) designed to discharge water, foam solution and dry chemical powder. One (1) LED spotlight shall be mounted at roof turret.</p> <p>Roof Turret shall conform to the minimum usable capacity for Vehicle Water Tank Capacity >6000 L as stated in Annex C of this TOR.</p> <p>Where a power-assisted turret is specified, the following shall apply:</p> <p>a. Controls shall be in the cab.</p>	

	<ul style="list-style-type: none"> b. An indicator of roof turret elevation and azimuth shall be provided. c. Where specified, a manual override or secondary control powered by an alternative source of all turret movement functions shall be provided. d. Where specified, secondary controls shall be capable of operating the turret with a failed primary control system. e. Where specified, the manual override for turret operation force shall be less than 133.4 N (30 lbf). <p>Turrets shall be capable of the following:</p> <ul style="list-style-type: none"> a. Being elevated at least 45 degrees above the horizontal. b. Discharging agent within ≥ 21 m in front of the vehicle at full output using a dispersed stream. c. Where a single turret is used on a vehicle, being rotated not less than 90 degrees to either side, with total traverse not less than 180 degrees. d. Where two turrets are used on a vehicle, stopping so that neither turret can interfere with the other turret. <p>Providing access to turret controls for both foam and dry chemical turrets to the driver and crew members.</p>	
	<p>17. Bumper Turret</p> <p>The ARFF vehicle bumper turret shall be a dual-agent power-assisted turret equipped with a non-aspirating nozzle (corrosion proof) designed to discharge water, foam solution and dry chemical powder.</p> <p>Bumper Turret shall conform to the minimum usable capacity for Vehicle Water Tank Capacity >6000 L as stated in Item 2c. of the Annex C of this TOR.</p> <p>Where a power-assisted turret is specified, the following shall apply:</p> <ul style="list-style-type: none"> a. Controls shall be in the cab. b. An indicator of roof turret elevation and azimuth shall be provided. 	

	<ul style="list-style-type: none"> c. Where specified, a manual override or secondary control powered by an alternative source of all turret movement functions shall be provided. d. Where specified, secondary controls shall be capable of operating the turret with a failed primary control system. e. Where specified, the manual override for turret operation force shall be less than 133.4 N (30 lbf). <p>Turrets shall be capable of the following:</p> <ul style="list-style-type: none"> a. Being elevated at least 45 degrees above the horizontal. b. Discharging agent within ≥ 15 m in front of the vehicle at full output using a dispersed stream. c. Where a single turret is used on a vehicle, being rotated not less than 90 degrees to either side, with total traverse not less than 180 degrees. d. Where two turrets are used on a vehicle, stopping so that neither turret can interfere with the other turret. e. Providing access to turret controls for both foam and dry chemical turrets to the driver and crew members. 	
	<p>18. Under-Truck Nozzle</p> <p>Undertruck nozzles shall be mounted under the truck and controlled from the cab to protect the bottom of the vehicle and the inner sides of the wheels and tires with foam solution discharged in a spray pattern.</p> <ul style="list-style-type: none"> e. The ARFF vehicle shall be provided with at least four (4) under truck nozzles with the capacity of at least 57 lpm (15 gpm) each. The nozzle shall be located to protect the under-truck area as well as the wheels and tires from ground fire and shall be actuated from the cab. 	
	<p>19. Preconnected Handlines</p> <p>19.1 Preconnected handlines shall be those handlines for discharging water or foam, or both, intended for use as primary ARFF equipment.</p>	

	<p>19.2 The ARFF vehicles shall be provided on each side of the lower body of the compartment with:</p> <ul style="list-style-type: none"> a) One (1) pre-connected handline, 1.5” dia. x 50 ft. double jacket delivery hose with pistol grip nozzle; and b) One (1) water and foam branch-pipe, 1.5” dia. with output of 360 lpm (95 gpm). <p>19.2.1 All other handlines that are installed on the vehicle shall not be considered to be preconnected handlines.</p> <p>19.3 Each preconnected handline compartment shall be located so that the distance between the handline nozzle and the ground, step, or surface upon which the operator stands to initiate the pulling of the handline from the reel or top layer of collapsible hose is not more than 1.8 m (6 ft) above the surface.</p> <p>19.4 Each handline shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be equipped with a pistol grip shutoff-type nozzle designed to discharge both foam and water in accordance with the performance criteria in Annex C of this TOR. (2) Meet the requirements of applicable NFPA or EN standards. <p>19.5 Collapsible handlines shall meet the requirements of applicable NFPA or EN standards and Annex C of this TOR.</p> <p>19.6 Each collapsible handline shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be equipped with a pistol grip shutoff-type nozzle designed to discharge foam and water in accordance with the performance criteria in Annex C of this TOR. (2) Meet the requirements of applicable NFPA or EN standards. <p>19.7 Hose storage areas shall have the following characteristics:</p>	
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	<p>(1) Be fabricated from noncorrosive material and designed to drain.</p> <p>(2) Be smooth and free from all projections that might damage the hose.</p> <p>(3) Have no other equipment mounted or located where it can obstruct the removal of the hose.</p> <p>19.8 The discharge control to each handline shall be adjacent to the handline and accessible to the person using the handline.</p>	
	<p>20. Preconnected Dual Agent Reeled Handline</p> <p>20.1 The ARFF vehicle shall be provided with a preconnected dual agent reeled handline located in a lower body compartment. The reel shall hold a minimum of 30m of 2.54cm (100' of 1" dia.) twinned booster hose with dual agent nozzle for water, foam solution and dry chemical agent.</p> <p>20.2 The nozzle shall be capable of flowing at least 227 liters per minute (60 gpm) straight stream and dispersed pattern. The nozzle shall also be capable of discharging 2.3 kgs./sec. of dry chemical powder. A manual/automatic reel rewind shall also be provided.</p> <p>20.3 Hose reel shall have the following characteristics:</p> <ol style="list-style-type: none"> 1) Be designed and positioned to allow hose reel removal by a single person from any position in a 120-degree horizontal sector. 2) Be designed to prevent the hose from unreeling when not desired. 3) Have power rewind with manual override. <p>20.4 The nozzle holder, friction brake, rewind controls, and manual valve control shall be accessible to the person using the hose reel.</p>	
	<p>21. Complementary Agent System</p> <p>The ARFF vehicle shall be provided with 250kg capacity of Dry Chemical System mounted on the vehicle with pressure valve, purge valve, relief valve.</p>	

The propellant agent shall be dry nitrogen gas and shall be sufficient to discharge two (2) loads of Dry Chemical Agent.

21.1 Dry Chemical Container. The dry chemical container shall be constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, or equivalent, and shall be so stamped.

21.1.1 All piping and fittings shall conform to the appropriate ASME, or equivalent, code to withstand the working pressure of the system.

21.1.1.1 The design of the piping and valving shall provide the desired flow of gas into the system and the minimum amount of restriction from the chemical container(s) to the hose connection

21.1.1.2 Where more than one hose line is provided, piping and fittings shall be sized and designed so that there is equal flow to each line, regardless of the number of lines placed in operation.

21.1.2 Provisions shall be made for purging all piping and hose of dry chemical after use without discharging the dry chemical remaining in the dry chemical container(s).

21.1.2.1 Provisions also shall be made for the depressurization of the dry chemical container(s) without the loss of the remainder of the dry chemical.

21.1.2.2 A pressure gauge shall be provided that indicates the internal pressure of the agent storage container(s) at all times.

21.1.3 The system shall have the following characteristics:

- (1) Be designed to ensure fluidization of the dry chemical at the time of operation;
- (2) Include a manual operating feature where any design includes the movement of the chemical container(s) to fluidize the contents.

	<p>21.1.4 A check valve shall be provided in the gas piping to prevent the extinguishing agent from being forced back into the propellant gas line.</p> <p>21.1.5 A means of pressure relief conforming to appropriate ASME codes, or equivalent, shall be provided for the dry chemical container and piping to prevent over-pressurization in the event of a malfunction in the propellant gas regulator system or in the event the container is involved in a severe fire exposure.</p> <p>21.1.6 The fill opening in the dry chemical container shall have the following characteristics:</p> <ul style="list-style-type: none"> (1) Be located so that it is easily accessible for recharging and necessitates a minimum amount of time and effort to open and close; (2) Allow for filling to be accomplished without the removal of any of the extinguisher piping or any major component. <p>21.1.7 Identical quick-acting controls shall be provided to pressurize the dry chemical agent system from the cab of the vehicle and at the handline.</p> <p>21.1.8 The pressure container shall be designed to allow hydrostatic testing.</p> <p>21.2 Dry Chemical Propellant.</p> <p>21.2.1 The propelling agent shall be dry nitrogen.</p> <p>21.2.2 All propellant gas cylinders and valves shall be designed, constructed, and marked in accordance with U.S. DOT, or equivalent, requirements or regulations.</p> <p>21.2.3 The propellant gas supply shall be sized to provide the capability to expel the fire-fighting agent, as well as to purge all piping and hose lines after each use.</p> <p>21.2.4 The design of the propellant source shall provide for quick and easy replacement after each use.</p>	
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	<p>21.2.5 A pressure gauge to indicate the pressure on the propellant gas source at all times shall be provided.</p> <p>21.2.6 Cylinder valves, gauges, and piping shall be arranged to preclude accidental mechanical damage.</p> <p>21.3 Dry Chemical Pressure Regulation.</p> <p>21.3.1 Pressure regulation shall be designed to reduce the cylinder pressure automatically and to hold the propellant gas pressure at the designed operating pressure of the dry chemical container(s).</p> <p>21.3.2 All pressure-regulating devices shall be sealed or pinned at the designed operating pressures after final adjustment by the system manufacturer.</p> <p>21.3.3 Pressure-regulating devices shall be equipped with a spring-loaded relief valve that relieves any excess pressure that develops in the regulator.</p> <p>The pressure regulator shall be permitted to be of a type without pressure indicating gauges.</p>	
	<p>22. Electrical System</p> <p>22.1 The ARFF vehicle electrical system (24 V) shall conform to the NFPA 414 2020 Edition or equivalent standards.</p>	
	<p>23. Lighting and Electrical Equipment</p> <p>The ARFF vehicle shall be provided with the following:</p> <ul style="list-style-type: none"> a) Electronic siren with public address system and front mounted speaker b) Strobe lights c) Blue LED strobe beacon light d) Deck lights e) Fog and Flood lights f) Stop, turn and back up lights with electric back up alarm 	

	<p>g) Compartment lights</p> <p>h) Step and ground lights</p> <p>i) Door ajar alarm</p> <p>23.1 Lighting equipment shall be installed in conformity with local road regulations, where practicable, and shall include the following:</p> <ol style="list-style-type: none"> (1) Headlights with upper and lower driving beams. A control switch that is readily accessible to the driver shall be provided for beam selection. (2) In addition to dual taillights and dual stop lights, a minimum of one additional stop light located high up on the rear of the vehicle. (3) Self-canceling turn signals, front and rear, with a steering column-mounted control and a visual and audible indicator. A four-way flasher switch shall be provided. (4) Adequate reflectors and marker and clearance lights furnished to describe the overall length and width of the vehicle. (5) Engine compartment lights, non glare type, arranged to illuminate both sides of the engine, with individual switches located in the engine compartment. Service lighting shall be provided for engine, pump and foam proportioning system, as well as for the engine compartment. (6) Lighting for all top-deck working areas. (7) At least one backup light and an audible alarm with a minimum of 97 dBA installed in the rear of the body. <p>23.2 A warning siren shall be provided that has a sound output of not less than 95 dBA at 30.5 m (100 ft) when measured directly ahead of the siren and not less than 90 dBA at 30.5 m (100 ft), measured at 45 degrees on either side.</p> <p>23.2.1 The siren shall be mounted to allow maximum forward sound projection but shall be protected</p>	
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	<p>from foam dripping from the turret or water splashed up by the tires.</p> <p>23.2.2 The siren unit shall consist of the following functions as a minimum: public address, wail, and yelp.</p> <p>23.2.3 A selector switch shall be mounted within reach of the driver that will allow the operation of the vehicle's horn and the siren from the horn button in the steering wheel.</p> <p>23.3 A horn shall be mounted at the front part of the vehicle, with the control positioned so that it is readily accessible to the driver.</p> <p>23.4 Exterior Emergency Warning Lights.</p> <p>23.4.1 A master switch for all exterior emergency warning lights shall be provided in the cab within easy reach of the driver.</p> <p>23.4.2 Emergency warning light(s) shall be mounted on the top of the vehicle and shall be visible for 360 degrees in a horizontal plane.</p> <p>23.4.2.1 The emergency warning light(s) shall be mounted so as to also be visible from the air.</p> <p>23.4.2.2 The emergency warning lights shall be Blue-colored rotating beacon type.</p> <p>23.4.3 Two alternating flashing emergency warning lights shall be mounted at the rear of the vehicle as far apart as practical.</p> <p>23.4.3.1 These lights shall not be mounted any higher than 1828.8 mm (72 in.) above ground level.</p> <p>23.4.3.2 Rear emergency warning lights shall be LED flasher type.</p> <p>23.4.4 Two alternating flashing emergency warning lights shall be mounted at the front of the vehicle as far apart as practical.</p>	
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	<p>23.4.4.1 These lights shall not be mounted any higher than 1828.8 mm (72 in.) above ground level.</p> <p>23.4.4.2 Front emergency warning lights shall be LED flasher type.</p> <p>The complete emergency warning light system shall require no more than a combined total of 12 volt 40 amps or equivalent for other voltages.</p>	
	<p>24. Power Source Generator</p> <p>Power source generator suitable for the rescue equipment shall be provided with an output capacity of not less than 5kva. It shall be equipped with electric and manual starter.</p>	
	<p>25. Camera System</p> <p>The ARFF vehicle shall be provided with a forward and back camera system.</p>	
	<p>26. Radio</p> <p>A four (4) channel VHF/FM radio shall be mounted in the cab for two-way voice radio communication linking with the fire station, control tower, and all other aircraft fire and rescue vehicle.</p>	
	<p>27. Vehicle Paint Finish</p> <p>The ARFF vehicle shall be painted and marked to comply with the painting and marking standards for ICAO, NFPA and other vehicle related painting standards and in accordance to the End-user's instructions.</p>	
	<p>28. Metal Finish.</p> <p>28.1 All exposed ferrous metal surfaces that are not plated or of stainless steel or that are not otherwise treated to resist corrosion shall be cleaned thoroughly and prepared and shall be painted in the color(s) specified by the End-user.</p> <p>28.2 If nonferrous body components are furnished, the purchaser shall specify which surfaces are to be painted.</p> <p>28.3 The paint, including the primer, shall be applied in accordance with the paint manufacturer's recommendation.</p>	

	<p>28.4 Paint finish shall be selected for maximum visibility and shall be resistant to damage from fire-fighting agents.</p> <p>28.5 Dissimilar metals shall not be in contact with each other.</p> <p>28.6 Metal plating or metal spraying of metals of dissimilar base to provide electromotively compatible abutting surfaces shall be permitted.</p> <p>28.7 The use of dissimilar metals separated by suitable insulating material shall be permitted. In systems where bridging of insulation materials by an electrically conductive fluid can occur, dissimilar metals shall not be permitted.</p> <p>28.8 Materials that deteriorate when exposed to sunlight, weather, or operational conditions normally encountered during service shall not be used or shall have a means of protection against such deterioration that does not prevent compliance with performance requirements.</p> <p>28.9 Protective coatings that chip, crack, or scale with age or extremes of climatic conditions or when exposed to heat shall not be used.</p> <p>The use of proven, nonmetallic materials in lieu of metal shall be permitted, provided such use contributes to reduced weight, lower cost, or less maintenance and there is no degradation in performance or increase in long-term operations and maintenance costs.</p>	
	<p>29. Lettering, Numbering and Striping</p> <p>29.1 Vehicle lettering, numbering and reflective striping shall be provided in accordance with the End-user's instructions.</p>	
	<p>30. Towing Connections</p> <p>The ARFF vehicle must be equipped with towing connections at the front and at the rear, whose forces applicable correspond to the total mass of the vehicle load.</p>	
	<p>31. Manuals</p> <p>The ARFF vehicles shall be provided with three (3) sets of the following manuals bound in hardcover. Two copies shall be provided for the end-user and one copy for the supplier (in</p>	

English language). An electronic file in readable digital format shall also be provided to the End-user. These manuals shall cover the entire vehicle and shall contain the following information:

31.1 Operators Manual

- a. Operating instructions shall include all information required for operation of the vehicle, vehicle components, firefighting systems, and integral vehicular options.
- b. The location and function of all controls and instruments shall be covered by illustrations and descriptions.
- c. These instructions, as a minimum, also shall include the following: (1) Complete description of the vehicle and special equipment (2) Preparation for use of the vehicle upon receipt (3) Daily maintenance and mission readiness checks to be performed by the operator (4) Periodic operator inspection.

31.2 Service Manual

- a. The service manual shall contain the regular maintenance schedule including operating hours, mileage, and cycle time.
- b. The repair and overhaul instructions shall be factual, specific, concise, and clearly worded.
- c. The instructions shall cover such typical maintenance and repair operations as troubleshooting, adjustment procedures, minor and major repairs and overhaul, removal and replacement of units, assemblies and subassemblies, and complete instructions for disassembly and reassembly of components.
- d. The instructions also shall include data that include tolerances, specifications, and capacities.
- e. Illustrations, wiring diagrams, and exploded views shall be used to clarify text and shall appear as close to the related text as possible.
- f. Special tools needed for the repair and overhaul of the equipment shall be specified and illustrated.

	<p>g. The service manual shall contain a suitable index.</p> <p>31.3 Parts Manual</p> <ul style="list-style-type: none"> a. The parts list shall include illustrations and exploded views necessary for the proper identification of all parts, assemblies, and subassemblies. b. Assemblies or components shall be shown in illustrations and shall be identified by reference numbers that correspond to the reference numbers in the parts list. c. The size, thread dimensions, and special characteristics shall be given on all nonstandard nuts, bolts, washers, grease fittings, and similar items. d. The parts identification manual shall provide the description and quantity of each item used per vehicle. e. The parts identification manual shall contain a numerical index. <p>31.4 Guarantee Certificate</p> <p>31.5 Operator instruction for the chassis</p> <p>31.6 Water/foam diagram</p> <p>31.7 Pneumatic connection diagram</p> <p>31.8 Axle weight distribution system</p>	
	<p>32. Vehicle Information Data Plate</p> <p>A data plate that contains, as a minimum, all the following information:</p> <ul style="list-style-type: none"> a. Manufacturer b. Vehicle make and model year c. Drive Type: 6x6 d. Front axle loading (kg/lbs) e. Second axle loading (kg/lbs) 	

	<ul style="list-style-type: none"> f. 3rd axle loading (if applicable) g. 4th axle loading (if applicable) h. Tire manufacturer i. Tire model j. Tire pressure (kPa/psi) k. Front wheel track (cm/in.) l. Rear wheel track (cm/in.) m. Crew capacity (number of personnel) n. Fuel tank capacity (L/gal) o. Water tank capacity (L/gal) p. Foam tank capacity (L/gal) q. DCP capacity (kg/lbs) r. GVWR 	
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33. Rescue Equipment

The ARFF vehicle shall be provided with the following equipment for rescue operations per ICAO Doc 9137 Chapter 5:

Equipment Scope	Equipment item	No. of pcs/units (CAT 8-10)
Forcible Entry Tools	Prying Tool (Hooligan, Biel Type)	2
	Crowbar 95cm	2
	Crowbar 1.65m	2
	Axe, Rescue Large Non Wedge Type	2
	Axe, Rescue Small Non Wedge or Aircraft Type	4
	Cutter Bolt 61cm	2
	Hammer 1.8kg – Lump or Club Type	2
	Chisel Cold 2.5cm	2
A Suitable Range of Rescue/Cu	Hydraulic/Electrical (or Combination) Portable Rescue Equipment	2

	t-In Equipment Including Powered Rescue Tools	Powered Rescue Saw Complete with Minimum 406mm Diameter Spare Blades	2
		Reciprocating/Oscillating Saw	2
	A Range of Equipment for The Delivery of Firefighting Agent	Delivery Hoses 30m Lengths X 50 And 64mm	22
		Foam Branches (Nozzles)	3
		Water Branches (Nozzles)	6
		Coupling Adaptors	3
		Portable Fire Extinguishers	
		CO ²	3
		DCP (Dry Chemical Powder)	3
	Self-Contained Breathing Apparatus - Sufficient to Prolonged Internal Operations	Breathing Apparatus (BA) Set Complete with Facemask and Air Cylinder	One (1) set per Crew Member in Cab
		BA Spare Air Cylinder	
		BA Spare Facemask	
	Respirators	Full Faced Respirators Complete with Filters	4
	A Range of Ladders	Extension Ladder, Rescue and Suitable for Critical Aircraft	3
		Ladder General Purpose – Rescue Capable	2
	Protective Clothing	Firefighting Helmet, Coats, Over Trousers (Complete with Braces), Boots and Gloves as A Minimum	Five (5) Sets Plus 100% Reserve Per Truck.
	Additional Items for Personal Protection	Protective Goggles	3
Flash Hoods		Five (5) Sets Plus 100% Reserve Per Truck.	
Surgical Gloves		1 Box	

		Blanket Fire Resisting	2	
Rope Lines		Rope Line Rescue 45m	2	
		Rope Line General Use 30m	2	
		Rope Line Pocket 6m	4	
Communication Equipment		Portable Transceivers (Hand Held and Intrinsically Safe)	3	
		Mobile Transceiver (Vehicle)	2 Base Radio	
A Range of Hand Held/Portable Lighting Equipment		Hand Held Flashlight (Intrinsically Safe)	4	
		Portable Lighting – Spot or Flood (Intrinsically Safe)	3	
A Range of General Hand Tools		Shovel Overhaul	2	
Rescue Tool Box and Contents		Hammer, Claw 0.6kg Cutters, Cable 1.6cm Socket Set Hacksaw, Heavy Duty Complete with Spare Blades Wrecking Bar 30cm Screwdriver Set Slotted and Phillips Heads Pliers, Insulated Combination 20cm Side Cutting 20cm Slip Joint – Multi Grip 25cm Seat Belt /Harness Cutting Tool Wrench, Adjustable 30cm Spanners, Combination 10mm – 21mm	Three (3) Rescue Tool Box and Contents	
First Aid Equipment		Medical Trauma Kit	3	
		Automated External Defibrillator (AED)	3	
		Oxygen Resuscitation Equipment (ORE)	3	
Miscellaneous Equipment		Chocks And Wedges – Various Sizes	2 Suitable Size for Fire Truck Tires	
		Tarpaulin – Lightweight	3	
		Thermal Imaging Camera (Handheld)	2	
34. Certification				

	<p>A. Proof of compliance stating that the Cab of the offered vehicle meets the requirement of one of the following sets of standards (NFPA 414-2020, 4.12.3.6):</p> <ul style="list-style-type: none"> (1) SAE J2420, COE Frontal Strength Evaluation – — Dynamic Loading Heavy Trucks, and SAE J2422, Cab Roof Strength Evaluation — Quasi-Static Loading Heavy Trucks; or (2) ECE Regulation number 29, Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle 	
	<p>35. Self-Contained Breathing Apparatus (SCBA) Refilling Machine</p> <p>35.1. The offered ARFF vehicle shall be provided with one (1) unit Self-Contained Breathing Apparatus (SCBA) Refilling Machine appropriate to the supplied SCBA cylinder units</p>	

Terms of Reference

INTRODUCTION

The General Appropriations Act (GAA) of CY 2024 includes among others the procurement of Aircraft Rescue and Firefighting (ARFF) vehicles.

At present, the firefighting capability of several airports under CAAP fall short in terms of level of protection that must be provided to new and bigger aircraft now operating in the region.

CAAP cannot cope with the demand of these bigger aircraft principally because of inadequate number of ARFF vehicles, and if not, the existing ARFF vehicles are too old, antiquated, underrated and some have already surpassed their operational life.

Hence, the procurement of additional ARFF vehicles is essential, not only to comply and meet the standards prescribed by the International Civil Aviation Organization (ICAO) but primarily to modernize CAAP's firefighting vehicle fleet and live up with the primary objective of rescue and firefighting services "to save lives in the event of aircraft accident or incident". (*Airport Services Manual Part 1, Chapter 1 – Rescue and Firefighting 1.1.1*)

Likewise, the acquisition of new and state-of-the-art ARFF vehicles provides an opportunity to consider not only its contribution as a replacement but also the extent to which it may be specified so as to accommodate any future categorization, as maybe required by changes in the volume of traffic or the introduction of longer aircraft. The anticipated "operational life" of the vehicle, with reasonable care and maintenance, will be at least ten (10) years, and an assessment of the probable growth of traffic in this period should be a factor in the specification of a vehicle. (*Airport Service Manual Part 1, Chapter 5 – Rescue and firefighting Vehicle; 5.3.2*)

SECTION I. BIDDER'S ELIGIBILITY

The qualifications of the bidders are:

1. Bidders must have a maintenance capability to perform within the service warranty period (See Section VII):
 - a) Maintenance and/or minor repairs such as, but not limited to, troubleshooting and replacement of fast moving items/spare parts (fan belts, filters, etc.) – within three (3) days after notification; and
 - b) Major repairs – within thirty (30) days after notification.
2. Bidders must submit an exclusive distributorship or authorized distributorship of the ARFF vehicle certified and duly authenticated by Philippine Consulate in the country of origin.
3. Bidders must submit documentary evidence that they have a service center or provider counterpart authorized by the Original Equipment Manufacturer (OEM) located in the Philippines and registered with the Securities Exchange Commission (SEC).

4. Bidders shall submit a manufacturer's compliance certification that the ARFF vehicles to be supplied meet the latest standards of all of the following: ICAO, NFPA 414- 2020 and FAA, as may be applicable.
5. Bidders shall submit as part of the Bidding Documents a brochure containing the detailed technical description of its ARFF vehicles.
6. Bidders shall submit as part of the Bidding Documents a certification that the ARFF vehicles to be offered are compliant with CAAP's technical requirements under this TOR.
7. Bidders shall have at least 15 years of experience in manufacturing ARFF vehicles.
8. Bidders shall have a warranty of five (5) years for parts, labor, and maintenance of the ARFF vehicles, as provided under this TOR.
9. Prior to acceptance, bidders must supply fast-moving items/spare parts which include the following:
 - 9.1. Windscreen wiper blades
 - 9.2. Fan belts
 - 9.3. Lamps for indicators
 - 9.4. Lamps for vehicle lighting systems
 - 9.5. Oil filters
 - 9.6. Air filters
 - 9.7. Spin-On Cartridge CPL
 - 9.8. Pre-fuel Filter
 - 9.9. Element, Service, Fuel Filter
 - 9.10. Filter Element, Spin-On
 - 9.11. Filter & Gasket Kit
 - 9.12. Batteries
 - 9.13. Diodes
 - 9.14. Power Relays
10. Bidders shall accommodate the following CAAP personnel for vehicle testing, factory inspection and acceptance, and provide trainings to CAAP personnel as follows:
 - 10.1. Five (5) CAAP personnel for vehicle testing and factory inspection and acceptance;
 - 10.2. Two (2) CAAP ARFF personnel per recipient airport for training on operations and troubleshooting (See Section VIII);
 - 10.3. Two (2) CAAP ARFF personnel per recipient airport for extensive maintenance training (See Section VIII);
 - 10.4. All ARFF crew/personnel in airports of destination for On-Site Training on operations (See Section VIII); and
 - 10.5. Five (5) recurrency trainings on extensive maintenance every two (2) years (See Section VIII).

11. Bidders must not be blacklisted or barred from the bidding by the Government of any country, any of its agency, offices, corporation or Local Government Units and not included in the consolidated blacklisting report by the Government Procurement Policy Board (GPPB).
12. Bidders should have completed at least two (2) contracts for the supply and delivery of ARFF vehicles within the last seven (7) years, the largest of which must be equivalent to at least half of the percentage of the ABC as provided in this TOR.
13. Bidders should have delivered 6x6 ARFF vehicles in tropical countries within the last five (5) years to ensure that its vehicles are suitable for tropical climates.
14. Bidders shall submit a Certificate of Good Standing from the End-user/s of previously delivered ARFF vehicles.
15. Bidders must submit a sworn certification that the model being offered could be supported for at least ten (10) years in terms of spare parts availability and service from the date of the issuance of the Acceptance and Inspection Certificate.
16. In case of a Joint Venture Agreement (JVA), all requirements and documents submitted must be in accordance and/or compliance with Republic Act No. 9184.
17. Winning bidder must deliver Eight (8) units of ARFF vehicles within eighteen (18) months from the issuance of the Notice to Proceed (NTP).
18. Brand new ARFF vehicles shall be delivered to the airports of destination under shipping terms, D.D.P. – Delivered Duties Paid. Duties, taxes, and all expenses on wharfage, arrastre and related services are to be shouldered by the winning bidder. All other documents needed to release the ARFF vehicles shall likewise be the responsibility of the winning bidder. For purposes of this section, the airports of destination are listed in Annex A of this TOR, but subject to change at any time at the option of CAAP.
19. Spare parts to be provided to CAAP shall likewise be manufactured by the winning bidder. Otherwise, the latter shall submit authenticated letters of agreement with OEM spare parts suppliers to certify the ready availability of the same. (See Section VII)
20. Prior to contract signing, the winning bidder shall, upon receipt of the Notice of Award, secure a Bank Guarantee in the amount of fifteen percent (15%) of the total Contract Price.
21. Prior to acceptance, the winning bidder shall provide five (5) sets of periodic and/or time-change spare parts at no additional cost to CAAP.
22. Prior to acceptance, the winning bidder shall facilitate Land Transportation Office (LTO) registration of the ARFF vehicles (red plate) under the name of the Civil Aviation Authority of the Philippines within sixty (60) days from delivery, *Provided* that the submission of the proof of complete filing of vehicle registration requirements to the LTO is a prerequisite to the issuance of an Acceptance and Inspection Certificate for the respective vehicles.

23. Payment Terms: The terms of payment shall be as follows:
- 23.1. On Contract Signature: Fifteen percent (15%) of the total Contract Price shall, upon submission of a claim for advance payment and the Bank Guarantee as provided in Section I.20 of this TOR, be paid within sixty (60) days from the signing of the Contract which shall remain valid until the Goods are delivered.
 - 23.2. On Delivery: Sixty percent (60%) of the total Contract Price per vehicle delivered shall be paid to the Supplier within sixty (60) days after the date of receipt of the Goods at the airport of destination and upon submission of documents (i) through (vi) as specified in the SCC provision on Delivery and Documents.
 - 23.3. Acceptance: The remaining twenty percent (20%) of the total Contract Price shall be paid to the Supplier within sixty (60) days after the date of submission of the Acceptance and Inspection Certificate for the complete delivery of the Eight (8) ARFF vehicles to be issued by CAAP's authorized representative. In the event that no Acceptance and Inspection Certificate is issued by CAAP's authorized representative within forty-five (45) days from the date shown on the delivery receipt, the Supplier shall have the right to claim payment of the remaining twenty percent (20%) subject to CAAP's own verification of the reason(s) for the failure to issue the required documents.
 - 23.4. All progress payments shall first be charged against the advance payment until the latter has been fully exhausted.
 - 23.5. Five percent (5%) of the total Contract Price shall be covered by a special bank guarantee to cover the Supplier's warranty obligations as provided under this TOR.
24. Technicality: To avoid disqualification for technical reasons, bidders are advised to go over the bid documents thoroughly and comply with all requirements.
25. The Manufacturer should provide valid documents such as equivalent business permit as manufacturer, if he himself will bid in this tender.
26. In the case of foreign bidders in countries where Mayor's permit are not issued to business entities, state issued certification shall be required as replacement.
27. All the accessories and rescue tools of the ARFF vehicles should be provided and/or supplied as to specifications cited and set forth in the Terms of Reference.
28. The distribution or delivery schedule to airports of destination of the ARFF vehicles is indicated in the Schedule of Requirements. Bidders shall consider all expenses associated with the delivery in their financial bid.
29. The winning bidder shall process and pay for the warehouse charges and arrastre.

30. The CAAP-BAC reserves the right to declare a failure of bidding when all prospective bidders are declared ineligible, when all bids failed to comply with all the bid requirements, or when the winning bidder refuses, without justifiable cause, to accept the award of contract, without thereby incurring any liability to the affected bidder/s.
31. CAAP reserves the right to accept or reject any bid, to annul the bidding process and to reject all bids at any time prior to contract award, without thereby incurring any liability to the affected bidder/s, if lawful, valid, and justifiable grounds exist as specified in Section 41 of Republic Act No. 9184.
32. Queries must be submitted in writing at least ten (10) days before bid opening and only those who purchased the bid documents shall be answered through bid bulletin copy furnished to all bidders.
33. In the interest of promoting organization and clarity in the bid proposal submission process, it is highly recommended that all bidders include pagination in their submitted documents. This will facilitate easier navigation and review of the proposals. However, please note that while pagination is encouraged for the sake of convenience and efficiency, its absence will not be a ground for disqualification.
34. The provision of Section 43, Rule XII of the 2016 RIRR of RA 9184 for procurement of Domestic and Foreign goods shall not apply.
35. Republic Act No. 8749 and its Implementing Rules and Regulations (IRR), otherwise known as the “Philippine Clean Air Act of 1999” shall be observed and followed by the Prospective Bidders for the projects.
36. In lieu of a bid security, the bidder may submit a Bid securing declaration that is an undertaking which states, among others, that the bidder shall enter into contract with the procuring entity and furnish the required performance security within ten (10) calendar days, or less, as indicated in the bidding documents, from receipt of notice of award, and committing to pay the corresponding fine and be suspended for a period of time from being qualified to participate in any government procurement activity in the event it violates any of the conditions stated therein as required in the guidelines issued by the GPPB.

SECTION II. SCOPE OF WORK

The scope of work shall cover supply, procurement, manufacture, commissioning, registration, maintenance, warranty, delivery and training for the operation and maintenance of Eight (8) units of 6x6 ARFF vehicles.

The ARFF vehicles shall comply with any of the following: ICAO, FAA or NFPA 414-2020 Latest Edition Standards and the specifications, as may be applicable, as enumerated hereunder:

1. General Description

- a) International Standard and Recommended Practices, Annex 14 Aerodromes, Volume 1 Aerodrome Design and Operation, 9th Edition – July 2022 International Civil Aviation Organization (ICAO);
- b) Airport Services Manual (Doc. 913-AN/898) Part I Rescue and Firefighting 4th Edition – 2015 ICAO;
- c) NFPA 414 Standards for Aircraft Rescue and Firefighting Vehicles, 2020 Edition, National Fire Protection Association (NFPA), USA; or
- d) FAA Advisory Circular (AC No. 150/5520-10D).

The Aircraft Rescue and Firefighting Vehicle should be suitable for tropical climate and the body color should be selected from the manufacturer's standard color by the end-user. Marking shall be in accordance with the End-user's instruction.

ARFF vehicle shall meet or exceed the following standards:

- a. Fully Loaded Vehicle Performance Parameters (SI Units) as specified in **Annex B** of this TOR;
- b. Agent System Performance Parameters (SI Units) as specified in **Annex C** of this TOR; and the
- c. Minimum characteristics for RFF vehicles as specified in Chapter 5 of ICAO Doc 9137.

2. Chassis

The chassis for the ARFF vehicle shall be a 6x6 ARFF Custom-Built Chassis. The ARFF vehicles shall be a minimum of 3 meters and maximum of 3.5 meters in width (excluding mirrors).

3. Engine

The ARFF vehicle shall be powered by a diesel engine with sufficient horsepower to meet ICAO, NFPA 414 requirements on acceleration and performance for the size vehicle with sufficient cooling system to maintain continuous supply of flow of water circulation with full load operation of the engine at both stationary and maximum speed.

The engine shall be rear mounted and shall be provided with tilting or sliding hood or swing type or roller shutter door with sufficient walk-in access to the engine, cooling, and electrical systems for service. Engine shall be Euro 5 Emissions Compliant.

3.1 Engine Performance Requirements and Characteristics

- 3.1.1 The vehicle engine(s) shall have the horsepower, torque, and speed characteristics to meet and maintain all vehicular performance characteristics specified in this standard.
- 3.1.2 The engine manufacturer shall certify that the installed engine is approved for this application.

- 3.1.3 The fully loaded vehicle shall be able to accelerate consistently from 0 kph to 80.5 kph (0 mph to 50 mph) on dry, level concrete pavement at the operational airport within 35-40 seconds.
- 3.1.4 The maximum speed shall not be less than 112 kph.
- 3.1.5 The vehicle also shall be capable of ascending, stopping, starting, and continuing ascent on a 40 percent grade on dry pavement at a speed up to at least 1.6 kph (1 mph) with extinguishing agents being discharged from the primary turret nozzle(s).

3.2 Engine Cooling Systems

- 3.2.1 An engine coolant preheating device shall be provided as an aid to rapid starting and high initial engine performance.
- 3.2.2 This device shall be fitted with an automatic thermostat.
- 3.2.3 If the engine coolant preheating device requires electrical power from an outside source to operate, a grounded ac receptacle shall be provided to allow a pull-away connection from the local electric power supply to the engine coolant preheating device.
- 3.2.4 The cooling system shall be designed so that the stabilized engine coolant temperature remains within the engine manufacturer's prescribed limits under all operational conditions and at all ambient temperatures (0°C to 43.3°C) that might be encountered at the operational airport.
- 3.2.5 The cooling system shall be provided with an automatic thermostat for rapid engine warming.

3.3 Fuel System

- 3.3.1 A complete fuel system shall be installed with the engine manufacturer's approval.
- 3.3.2 The fuel system shall be protected from the following:
 - (1) Damage
 - (2) Exhaust heat
 - (3) Exposure to ground fires
 - (4) Vapor lock
- 3.3.3 Accessible filtration for each fuel supply line and a drain shall be provided at the bottom of the fuel tank.
- 3.3.4 A fuel-water separator equipped with a manual drain shall be supplied where the vehicle is equipped with a diesel-fueled engine.

3.3.5 The fuel-water separator shall meet the engine manufacturer's requirements.

3.3.6 Fuel tanks shall not be installed in a manner that allows gravity feed.

3.4 Exhaust System

3.4.1 The exhaust system shall be constructed in such a manner that exhaust discharge is directed away from any operators.

3.4.2 The exhaust system shall be of high-grade, rust-resistant materials.

3.4.3 The exhaust system shall include a muffler to reduce engine noise.

3.4.4 The exhaust system shall be protected from damage that could result from traversing rough terrain.

3.4.5 The tailpipe shall not be directed toward the ground.

4. Transmission

4.1 Transmission of power from the engine to the wheels of the vehicle shall be through an automatic gearbox.

4.2 The entire drivetrain shall be designed and rated by the component manufacturer as having the strength to slip the wheels of the static-loaded vehicle on a surface having a coefficient of friction of 0.8.

4.3 The transmission shall be approved by its manufacturer for the application.

4.4 A transmission cooling system shall be provided and designed so that the stabilized transmission oil temperature remains within the transmission manufacturer's prescribed limits under all operational conditions and at all ambient temperatures encountered at the operational airport.

4.5 A positive drive shall be provided to each wheel by means of a fully locked driveline in order to maximize traction on low-friction surfaces.

4.5.1 Positive drive either shall be permitted to be achieved by the use of automatic locking and torque proportioning differentials or shall be permitted to be selected manually by the seated driver by use of a single control while the vehicle is in motion.

5. Cab

The ARFF vehicle shall be two doors with seating capacity of at least four (4) with equivalent SCBA mounting brackets on each seating location, laminated and tinted safety glass windshield shall be provided.

Adjustable driver seat and three-point seat belt should be provided, air-conditioning system, two adjustable side mirrors and at least two speed electric windshield wipers should also be provided.

The ARFF vehicles shall be a minimum of 3 meters and maximum of 3.5 meters in width (excluding mirrors).

5.1 Cab Interior

- 5.1.1 The cab shall be fully enclosed (i.e., floor, roof, and four sides).
- 5.1.2 Seating for the crew shall be restricted to the cab.
- 5.1.3 As a minimum, at least a total of four (4) seat positions shall be provided.
- 5.1.4 Three-point seat belts equipped with a single hand hookup shall be provided for each of the designated seating positions.
- 5.1.5 Space shall be provided for all instrument controls and equipment specified without hindering the crew.
- 5.1.6 Doors shall be provided on each side of the cab with steps and handrails to allow rapid entrance and exit from the cab while wearing full protective equipment.
- 5.1.7 Each door shall be equipped with a restraint device(s) to prevent the door from being sprung open by wind or jet blast.

5.2 Cab Visibility

- 5.2.1 The cab shall meet the visibility requirements of Chapter 4.3.2.2 of NFPA 414 – 2020 Edition.
- 5.2.2 Interior cab reflections from exterior and interior lighting shall be minimized.
- 5.2.3 The windshield shall be shatterproof safety glass.
- 5.2.4 All other windows shall be constructed of safety glass.
- 5.2.5 Where equipped with a primary turret having manual controls above the cab roof, the cab roof shall be designed with a quick access to the primary turret(s).

5.3 Cab Construction

- 5.3.1 The cab shall be weatherproof and shall be applied with anti-corrosion treatment.
- 5.3.2 The cab shall be fully insulated thermally and acoustically with a fire-resistant material.
- 5.3.3 The cab interior noise level at any seated position shall not exceed 85 dBA while the vehicle is being driven at 80.5 kph (50 mph) on a level, hard surface without warning devices operating.
- 5.3.4 While stationary and discharging water or foam from the high-volume turrets with exterior warning devices operating, the maximum noise level inside the cab shall be 90 dBA.
- 5.3.5 The cab shall be permitted to be of the unitized rigid body and frame structure type or a separate unit that is flexibly mounted on the main vehicle frame.
- 5.3.6 Cabs on apparatus with a GVWR greater than 11,800 kg (26,000 lb) shall meet the requirements of one of the following sets of standards:
 - (1) SAE J2420, COE Frontal Strength Evaluation — Dynamic Loading Heavy Trucks, and SAE J2422, Cab Roof Strength Evaluation — Quasi-Static Loading Heavy Trucks; or
 - (2) ECE Regulation number 29, Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle

5.4 Instruments, Warning Lights, and Controls.

- 5.4.1 The minimum number of instruments, warning lights, and controls consistent with the operation of the vehicle, chassis, and fire-fighting system shall be provided.
- 5.4.2 All chassis instruments and warning lights shall be grouped on a panel in front of the driver.
- 5.4.3 All fire-fighting system instruments, warning lights, and controls shall be grouped by function to provide ready accessibility and high visibility for the driver as well as crew members.
- 5.4.4 All instruments and controls shall be illuminated.

- 5.4.5 Groupings of both the chassis and the fire-fighting system instruments, warning lights, and controls shall be easily removable as a unit or shall be accessible for servicing.
- 5.4.6 The following instruments and warning lights shall be provided as a minimum:
- (1) Speedometer/odometer
 - (2) Engine tachometer(s)
 - (3) Fuel level
 - (4) Air pressure
 - (5) Engine(s) temperature
 - (6) Fire system pressure
 - (7) Water tank level
 - (8) Foam or tank level
 - (9) Low-air pressure warning
 - (10) Headlight beam indicator
 - (11) Engine(s) oil pressure
 - (12) Voltmeter(s)
 - (13) Transmission oil temperature
- 5.4.7 The cab shall have all the following controls within reach of the driver for operation of the vehicle and the pumping system:
- (1) Accelerator pedal
 - (2) Brake pedal
 - (3) Parking brake control
 - (4) Steering wheel, with directional signal control and horn
 - (5) Transmission range selector
 - (6) Pump control or selector
 - (7) Foam control
 - (8) Siren switch(es)
 - (9) Bumper turret controls or ground sweep valve control, where specified
 - (10) Undertruck valve control, where specified
 - (11) Remote turret controls, where remote turret is provided
 - (12) Light switches
 - (13) Windshield wipers with delayed and multi speed capability and washer controls
 - (14) Master electrical switch
 - (15) Means of starting and stopping engine
 - (16) Complementary agent pressurization control, where specified
 - (17) Windshield deluge system switch, where specified
- 5.4.8 Where specified, a windshield deluge system shall be designed to flood the windshield with clear water and to be energized automatically whenever the system is operated.

5.5 Equipment

- 5.5.1 The following equipment shall be provided in or on the cab, as applicable:
- (1) Driver's suspension seat with vertical, fore, and aft adjustment, with seat belt
 - (2) Crew seats with individual retractable seat belts
 - (3) Windshield washers
 - (4) Windshield wipers
 - (5) Siren
 - (6) Horn
 - (7) A means or provision that is designed to protect driver and crew from overhead glare and light from the sun
 - (8) Outside rearview mirrors
 - (9) Interior lighting
 - (10) Provisions for mounting at each crew seat position self-contained breathing apparatus (SCBA) of the type specified by the purchaser

5.6 SCBA Mounting. Where SCBA holders are mounted within a driving or crew compartment, they shall comply with the following:

- (1) The SCBA unit is mounted in a seatback, the release mechanism shall be accessible to the user while seated.
- (2) Each holder shall bear a label affixed by the holder manufacturer certifying compliance to NFPA or EN specifications.

5.7 Equipment Mounting

- 5.7.1 All equipment required to be used during an emergency response shall be securely fastened.
- 5.7.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 g force is applied in the longitudinal axis of the vehicle or a 3 g force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.
- 5.7.3 Signs visible from each seated position that state "Occupants must be seated and wearing a seat belt when apparatus is in motion" shall be provided.
- 5.7.4 A monitoring and data acquisition system (MADAS) shall be installed for the collection of various performance measurements to monitor, as a minimum, the following:
- (1) Vehicle speed
 - (2) Vehicle heading
 - (3) Lateral acceleration
 - (4) Vertical acceleration
 - (5) Longitudinal acceleration and deceleration
 - (6) Engine rpm

- (7) Throttle position
 - (8) Steering input
 - (9) Vehicle braking input (pedal position and brake pressure)
 - (10) Date, time, and location for all data collected
- 5.7.5 The data acquisition system shall be capable of storing the measurements and the time intervals, starting at least 120 seconds before and ending at least 15 seconds after any serious incident.
- 5.7.6 The data acquisition system shall be designed so that the data being recorded will not be lost or overwritten immediately after the incident due to the use of an emergency shutoff or a master electrical disconnect switch.
- 5.7.7 If a lateral acceleration indicator is provided, it shall be adjustable for sensitivity and provide both visual and audio warning signals and warnings to the driver.

6. Body

- 6.1 The body shall be constructed of materials that are of the lightest weight consistent with the strength necessary for off-pavement operation over rough terrain and exposure to excess heat, and body panels shall be removable where necessary to provide access to the interior of the vehicle.
- 6.2 Access doors shall be provided for those areas of the interior of the vehicle that are inspected frequently, including, but not limited to, the following:
- (1) Engine
 - (2) Pump
 - (3) Foam-proportioning system
 - (4) Battery storage
 - (5) Fluid reservoirs
- 6.3 Compartments for storage of equipment and tools to be carried on the vehicle shall have the following characteristics:
- (1) Be weather resistant
 - (2) Be self-draining
 - (3) Be lighted
- 6.4 A working deck that is reinforced and constructed of, or covered with, a slip-resistant material shall be provided and shall be reinforced adequately to allow the crew to perform its duties in the primary turret area, cab hatch area, water tank top fill area and foam-liquid top fill area, and in other areas where access to complementary or installed equipment is necessary.
- 6.5 Handrails or bulwarks shall be provided where necessary for the safety and convenience of the crew.

- 6.5.1 Access handrails or handholds shall be provided at each entrance to a driving or crew compartment and at each position where steps or ladders for climbing are located.
 - 6.5.2 Exterior access handrails shall be constructed of or covered with a slip-resistant, noncorrosive material.
 - 6.5.3 Exterior access handrails shall be between 25.4 mm and 41.275 mm (1 in. and 15 /8 in.).
- 6.6 Steps or ladders shall be provided for access to the top fill area.
- 6.6.1 The lowermost step(s) shall be permitted to extend below the angle of approach or departure or ground clearance limits if it is designed to swing clear.
 - 6.6.2 All other steps shall be rigidly constructed and constructed of, or covered with, a slip-resistant material.
 - 6.6.3 The lowermost step(s) shall be no more than 558.8 mm (22 in.) above level ground when the vehicle is fully loaded.
 - 6.6.4 Lighting shall be provided to illuminate steps and walkways.
- 6.7 A front bumper shall be mounted on the vehicle and secured to the frame structure.
- 6.8 Attachments shall be provided for all tools, equipment, and other items that the purchaser specifies to be furnished on the vehicle.
- 6.8.1 Equipment holders shall be attached and designed so that equipment remains in place under all operating conditions.
 - 6.8.2 The equipment holders shall allow the equipment to be readily accessible and removable for use.
- 6.9 Each storage compartment identified by the vehicle manufacturer for use by the purchaser shall be labeled with tested weight.
- 6.10 Compartment loading shall not be exceeded as identified at the time of vehicle manufacture.
- 6.11 Provisions shall be made for mounting tools and equipment, as specified by the purchaser, on the truck.
- 6.12 Special tools for servicing the vehicle, fire suppression system, and any of the auxiliary equipment shall be identified specifically by the vehicle manufacturer and furnished as necessary by the vehicle manufacturer.

7. All-Wheel Drive

7.1 All-wheel drive on these vehicles shall incorporate a drive to the front and rear axles that is engaged at all times during the intended airport service.

7.2 An interaxle differential shall be installed with automatic means or driver-selected means of differential locking.

7.3 All traction-increasing devices shall be operated by a single control for driving simplicity.

8. Axle and Suspension

The ARFF vehicle axles and suspension shall be designed to meet or exceed the requirements of ICAO, FAA and NFPA 414 Standards (2020 Edition).

The ARFF vehicle suspension shall be provided an off-road high mobility all-wheel to guarantee superior off-road and high speed paved road capabilities.

The ARFF vehicle shall be equipped with power-assisted steering with direct mechanical linkage from the steering wheel to the steered axle(s) to allow manual control in the event of power-assist failure. (NFPA 414, Sec. 4.11.1)

8.1 Axle Capacity

8.1.1 Front and rear axles shall have the gross axle weight rating (GAWR) capacity to carry the maximum imposed load under all intended operating conditions.

8.1.2 The variations in axle track shall not exceed 20 percent of the tire(s) sectional width at rated load.

8.2 Suspension. The suspension system shall be designed to allow the loaded vehicle to perform as follows:

- (1) Travel at the specified speeds over improved surface.
- (2) Travel at moderate speeds over unimproved surface.
- (3) Provide diagonally opposite wheel motion above ground obstacles without raising the remaining wheels from the ground, in accordance with Annex B of this TOR.
- (4) Prevent damage to the vehicle caused by wheel movement.

9. Brake System

The braking system shall meet NFPA 414 or equivalent standards.

No part of the brake chamber shall project below the axle bowls. The air system shall have the capacity for quick build-up from 0 kPa (0 psi) to release of spring brakes within 15 seconds.

9.1 Service brakes shall be of the all-wheel type with split circuits so that failure of one circuit shall not cause total service brake failure.

9.1.1 The service brakes shall be capable of holding the fully loaded vehicle on a 50 percent grade.

9.1.2 The service brakes shall stop the vehicle within 12.2 m (40 ft) at 32.2 kph (20 mph) and within 48.8 m (160 ft) at 64.4 kph (40 mph).

9.1.3 Stopping distances shall be accomplished on a dry, hard, approximately level roadway that is free from loose material and that has a roadway width equal to the vehicle width plus 1.2 m (4 ft) without any part of the vehicle leaving the roadway.

9.1.4 For each vehicle, the service brakes shall provide one power-assisted stop while the vehicle engine is inoperative for the stopping distances specified in 9.1.1 through 9.1.3.

9.2 The parking brake shall be capable of holding the fully loaded vehicle on a 20 percent grade without air or hydraulic assistance.

9.3 Brakes — Air System.

9.3.1 Reservoirs shall be equipped with drain valves and safety valves.

9.3.2 Provision shall be made for charging of air tanks with either a pull-away electrical connection used to power a vehicle-mounted complementary compressor or a pull-away air connection for charging of air tanks from an external air source.

9.3.3 Visual and audible low-air pressure warning devices that are visible and audible to the driver from inside the cab of the vehicle shall be provided.

10. Rims, Tire and Wheels

The wheels shall all be all wheel drive single tire with left or center steering. The size of the tires should be compatible with the gross weight of the vehicle with full load and maneuvers through adverse terrain; handles high speed turns and stable in side slope conditions.

The ARFF vehicle shall be provided with two (2) spare tires and wheel in a serviceable condition. A tire pressure monitor shall also be installed which can be viewed from a screen inside the cab.

10.1 Vehicles shall be required to meet the specified paved surface performance while still providing off-pavement performance compatible with the conditions encountered at the operational airport.

- 10.2 A tire selection shall be made that reflects the off-pavement performance requirements necessitated by the soil conditions encountered at the operational airport.
- 10.3 Only new tires shall be mounted on the vehicles.
- 10.4 All wheels shall be of the single-wheel type, with all rims, tires, and wheels of an identical size and the same tire tread design.
- 10.5 Rims, tires, and wheels shall be certified by their respective manufacturers as having the capacity to meet the specified performance.
- 10.6 Tires shall be certified by their respective manufacturers for not less than 42.9 km (25 mi) of continuous operation at 96.5 kph (60 mph) when inflated at the operational pressure.

11. Water Tank

The ARFF vehicle water tank shall be at least 12,500 liters capacity in a non-corrosive maintenance free tank construction with top water fill opening, vent overflow outlet, mesh screen, baffle plates and water level gauge. A tank fill/drain of at least 2.5” diameter connection shall also be provided.

11.1 Capacity.

- 11.1.1 A water tank shall have a usable capacity as specified in Fully Loaded Vehicle Performance Parameters as specified in Annex B of this TOR.
- 11.1.2 The rated capacity of the tank shall be equal to the usable capacity that can be pumped from the tank while the vehicle is parked on level ground.
- 11.1.3 The tank outlets shall be arranged to allow the use of at least 85 percent of the rated capacity with the vehicle positioned as follows:
 - (1) On a 20 percent side slope
 - (2) On a 30 percent ascending grade
 - (3) On a 30 percent descending grade

11.2 Construction

- 11.2.1 The tank shall be constructed to resist all forms of deterioration that could be caused by the water and the foam concentrate while affording the structural integrity necessary for off-road operation.
- 11.2.2 The tank shall have the following characteristics:
 - (1) Be equipped with removable manhole covers over the tank discharge.
 - (2) Be designed to allow for internal and external inspection and service.
 - (3) Have longitudinal and transverse baffles.

- (4) Have a minimum 63.5 mm (2.5 in.) capacity drain connection installed at the bottom of the sump.

11.2.3 Provisions shall be made for necessary overflow and venting.

- 11.2.3.1 Venting shall be sized to allow agent discharge at the maximum design flow rate without danger of tank collapse.

- 11.2.3.2 Vents shall be sized to allow rapid and complete filling without exceeding the internal pressure design limit of the tank.

- 11.2.3.3 Overflows shall be designed to prevent loss of water from the tank during maneuvering and to direct the discharge of overflow water directly to the ground.

- 11.2.3.4 Water tank shall be full at start of tilt-table test.

- 11.2.3.5 Water loss shall be prevented during tilt-table testing.

11.2.4 The water tank shall have the following characteristics:

- (1) Be mounted in a manner that limits the transfer of the torsional strains from the chassis frame to the tank during off-pavement driving.
- (2) Be separate and distinct from the crew compartment, engine compartment, and chassis.
- (3) Be able to be removed as a unit.
- (4) Be permitted to be an integral part of unitized rigid body construction.

11.2.5 The water tank shall be equipped with at least one top fill opening of not less than 20.3 cm (8 in.) internal diameter.

- 11.2.5.1 The water tank top fill shall be equipped with an easily removable strainer of 6.4 mm (1/4 in.) mesh construction.

- 11.2.5.2 The water tank top fill opening shall be equipped with a cap designed to prevent spillage.

11.3 Tank Fill Connection(s)

- 11.3.1 A tank fill connection(s) shall be provided in a position where it can be reached easily from the ground.

- 11.3.2 All couplings shall be specified by the purchaser to the standard for the airport.

- 11.3.3 The connection(s) shall be provided with strainers of 6.4 mm (1/4 in.) mesh.

11.3.4 The tank fill connection(s) shall be sized to allow filling of the water tank in 2 minutes at a pressure of 551.6 kPa (80 psi) at the tank intake connection.

11.3.5 The tank connections shall have check valves or shall be constructed so that water is not lost from the tank when a connection or disconnection is made.

12. Foam Tank

The ARFF vehicle foam tank shall be at least 1,500 liters capacity in a non-corrosive maintenance free tank construction with top foam fill opening, vent, overflow outlet, mesh screen, baffle plates and foam level gauge. A tank fill/drain of at least 2.5" diameter shall be provided and located on the side of the apparatus.

One hundred percent (100%) capacity of Aqueous Film Form Foam (AFFF) - ICAO Performance Level B must form part of the delivery.

12.1 Foam-Liquid Concentrate Tank(s) shall be designed for compatibility with the foam concentrate being used.

12.2 Tanks shall be designed to allow for internal and external inspection and service.

12.3 The tank outlets shall be located above the bottom of the sump and shall provide continuous foam-liquid concentrate to the foam proportioning system, with that system operating at a) with a means of controlling the ratio of AFFF 3% foam concentrate to the quantity of water in the foam solution being discharged from all orifices used for aircraft firefighting operations; b) proportioning system accurate to provide for the discharge of finished foam within the range specified in Section 5.7.16 of ICAO Doc 9137; c) each nozzle shall have minimum discharge patterns and meet the parameters described in Annex C and with the vehicle discharging two tank loads of usable water.

12.4 The foam-liquid tank shall be mounted in a manner that limits the transfer of the torsional strains from the chassis frame to the tank during off-pavement driving.

12.4.1 The foam-liquid concentrate tank shall be removable as a unit.

12.4.2 Foam-liquid concentrate tanks used as an integral part of unitized rigid body construction shall be permitted.

12.4.3 A flexible tank shall be structurally supported to resist tearing independently of the fluid levels in either the water or foam tanks.

12.4.4 The structural support shall not be dependent on the fluid level in either the water tank or the foam tank.

12.5 A top fill trough shall have the following characteristics:

- (1) Be equipped with a mesh screen constructed of noncorrosive materials and container openers to allow emptying 18.9 L (5 gal) foam-liquid concentrate containers into the storage tank(s).
 - (2) Be connected to the foam-liquid storage tank(s) with a fill line designed to introduce foam-liquid concentrate to minimize foaming within the storage tank.
- 12.6 The tank fill connection(s) shall have the following characteristics:
 - (1) Be provided in a position where it can be reached, but not exceed 1.5 m (5 ft), from the ground to allow the pumping of foam-liquid concentrate into the storage tank(s).
 - (2) Be provided with strainers of 6.4 mm (1/4 in.) mesh and have check valves or be constructed so that foam is not lost from the tank when a connection or disconnection is made.
- 12.7 Where flexible tanks are used, the supply system shall have the following characteristics:
 - (1) Be designed so that the flexible tanks are not subject to excess pressure.
 - (2) Be capable of delivering foam-liquid at a rate at least equal to or greater than the maximum discharge rate of the foam system.
- 12.8 The tank(s) shall have the following characteristics:
 - (1) Be vented to allow for filling without the buildup of pressure.
 - (2) Allow emptying of the tank at the maximum design flow rate without danger of collapse.
 - (3) Have the vent outlets directed to the ground to prevent spillage of foam-liquid concentrate on vehicle components.
- 12.9 Foam Proportioning System Flushing. The foam-liquid concentrate system shall be arranged so that the entire piping system can be flushed readily with clear water.
- 12.10 Foam-Liquid Concentrate Piping. The foam-liquid concentrate piping shall be of material resistant to corrosion by foam-liquid concentrates.
 - 12.10.1 Care shall be taken that combinations of dissimilar metals that produce galvanic corrosion are not selected or that such dissimilar metals are electrically insulated.
 - 12.10.2 Where plastic piping is used, it shall be fabricated from unplasticized resins, unless it has been demonstrated that the stipulated plasticizer does not adversely affect the performance characteristics of the foam-liquid concentrates addressed in this standard.
 - 12.10.3 The plastic pipe shall be permitted to be reinforced with glass fibers.

12.11 The foam-liquid concentrate piping shall be sized to allow the maximum required flow rate.

12.12 The foam-liquid concentrate piping shall be arranged to prevent water from entering the foam tank.

13. Foam System

The ARFF vehicle shall be equipped with an automatic around the pump (ATP) type foam proportioning system. The foam system shall be sufficient for a maximum of 6% foam concentrate.

The foam concentrate proportioning system shall provide a means of controlling the ratio of foam concentrate to quantity of water. System shall be preset at 3% setting.

13.1 Foam Proportioning Systems. The foam concentrate proportioning system shall provide a means of controlling the ratio of Aqueous Film Forming Foam (AFFF) concentrate to the quantity of water in the foam solution being discharged from all orifices used for aircraft firefighting operations.

13.2 The proportioning system shall be accurate to provide for the discharge of finished foam within the range specified in ICAO Doc. 9137, Chapter 5.

13.3 Each nozzle shall have minimum foam discharge patterns and meet the discharge parameters described in Annex B of this TOR.

14. Fire Pump

The ARFF vehicle fire pump shall be centrifugal type, single or multi-stage with automatic priming system, stainless steel shaft, bronze body and impellers and cast housing with a minimum pump output of 6,000 lpm.

The Water Pump automatic priming system should allow pumping water from an external source.

14.1 Agent Pump(s) and Pump Drive

14.1.1 Agent Pump(s)

14.1.2 The water pump(s) shall be constructed of corrosion-resistant metals of the single-stage or multiple-stage centrifugal type designed for emergency service.

14.1.2.1 Pumps shall be gravity primed from the vehicle tank.

14.1.2.2 The pump and piping system shall be designed to eliminate the entrapment of air.

14.1.3 All proportioning system components shall be made of materials resistant to corrosion by all primary agents.

14.1.4 Where discharging foam solution, the pumping system shall be capable of discharging at a rate equal to or exceeding the total requirements of the roof, bumper turret or ground sweep nozzles, handline nozzles, and undertruck nozzles, discharging simultaneously at designed pressures.

14.2 Pump Drive

14.2.1 The pump(s) drive shall allow operation of the pump(s) and simultaneous operation of the vehicle.

14.2.1.1 The pump(s) shall not be affected by changes in transmission ratios or the actuation of clutches in the vehicle drive.

14.2.1.2 The design of the drive system and controls shall prevent damage to the drive and minimize lurching of the vehicle when the vehicle drive is engaged during pumping operations.

14.2.1.3 The pump(s) drive system shall be capable of absorbing the maximum torque delivered by the engine to the pump(s) and withstanding the engagement of the pump(s) at all engine and vehicle speeds and under all operating conditions.

14.2.1.4 The operation of the pump(s) shall not, under any conditions, cause the engine to stall or cause more than a slight and momentary reduction in engine speed and consequent drop in pump pressure.

14.2.2 While pumping at rated capacity, the drive shall allow controlled vehicle operation at speeds equivalent to the vehicle's maximum speed - "Full Pump and Roll"

14.2.2.1 During shifting from forward to rearward drive, the pumping system shall maintain the preset discharge pressure.

14.2.2.2 The pump(s) drive shall have the power capacity to provide the pump(s) discharge requirements of a rate equal to or exceeding the total requirements of the roof turret, bumper turret, handline nozzles, and undertruck nozzles, where specified, discharging simultaneously at designed pressures while the vehicle is being propelled under all operating conditions where fire-fighting capability is needed.

14.2.3 If an independent engine is used to drive the pump(s), it shall operate with the same fuel and electrical system as the chassis engine.

14.3 Tank-to-Pump Connections.

14.3.1 The tank-to-pump system shall be designed for flow at the pumping rates equal to or exceeding the total requirements of the roof turret, bumper turret, handline nozzles, and undertruck nozzles, where specified, discharging simultaneously at designed pressures.

14.3.2 A drain shall be at the lowest point with a valve for draining all the liquid from the pumping system.

14.3.3 Discharge Connections. All couplings shall be specified by the purchaser to the standard for the airport.

14.4 Piping, Couplings, and Valves.

14.4.1 Union or rubber-gasketed fittings shall be provided where necessary to facilitate removal of piping.

14.4.2 Piping shall be provided with flexible couplings to minimize stress.

14.4.3 All valves shall be of the quarter-turn type and shall be selected for ease of operation and freedom from leakage.

14.4.4 The tank-to-pump side of the pump piping shall be leak free.

14.4.5 All water and foam solution discharge piping, together with the agent pump(s), shall be tested at 50 percent above the system operating pressure.

14.5 Overheat Protection. An automatic system with a visual alarm shall be provided to prevent overheating of the pumps while they are engaged and operating at zero discharge.

14.6 Pressure Relief Valves. A pressure relief system shall be provided to protect and ensure optimum performance of the system.

14.7 Drains. A drainage system shall be provided appropriate for the design of the vehicle.

15. Piping

All piping connecting systems are of high-grade stainless steel and special rubber corrosion resistant under overpressure and vacuum conditions.

16. Roof Turret with Dry Chemical Nozzle

The ARFF vehicle roof turret shall be a power-assisted dual agent turret equipped with a non-aspirating nozzle (corrosion proof) designed to discharge water, foam solution and dry chemical powder. One (1) LED spotlight shall be mounted at roof turret.

Roof Turret shall conform to the minimum usable capacity for Vehicle Water Tank Capacity >6000 L as stated in Annex C of this TOR.

Where a power-assisted turret is specified, the following shall apply:

- a. Controls shall be in the cab.
- b. An indicator of roof turret elevation and azimuth shall be provided.
- c. Where specified, a manual override or secondary control powered by an alternative source of all turret movement functions shall be provided.
- d. Where specified, secondary controls shall be capable of operating the turret with a failed primary control system.
- e. Where specified, the manual override for turret operation force shall be less than 133.4 N (30 lbf).

Turrets shall be capable of the following:

- a. Being elevated at least 45 degrees above the horizontal.
- b. Discharging agent within ≥ 21 m in front of the vehicle at full output using a dispersed stream.
- c. Where a single turret is used on a vehicle, being rotated not less than 90 degrees to either side, with total traverse not less than 180 degrees.
- d. Where two turrets are used on a vehicle, stopping so that neither turret can interfere with the other turret.
- e. Providing access to turret controls for both foam and dry chemical turrets to the driver and crew members.

17. Bumper Turret

The ARFF vehicle bumper turret shall be a dual-agent power-assisted turret equipped with a non-aspirating nozzle (corrosion proof) designed to discharge water, foam solution and dry chemical powder.

Bumper Turret shall conform to the minimum usable capacity for Vehicle Water Tank Capacity >6000 L as stated in Item 2c. of the Annex C of this TOR.

Where a power-assisted turret is specified, the following shall apply:

- a. Controls shall be in the cab.
- b. An indicator of roof turret elevation and azimuth shall be provided.
- c. Where specified, a manual override or secondary control powered by an alternative source of all turret movement functions shall be provided.
- d. Where specified, secondary controls shall be capable of operating the turret with a failed primary control system.
- e. Where specified, the manual override for turret operation force shall be less than 133.4 N (30 lbf).

Turrets shall be capable of the following:

- a. Being elevated at least 45 degrees above the horizontal.
- b. Discharging agent within ≥ 15 m in front of the vehicle at full output using a dispersed stream.
- c. Where a single turret is used on a vehicle, being rotated not less than 90 degrees to either side, with total traverse not less than 180 degrees.
- d. Where two turrets are used on a vehicle, stopping so that neither turret can interfere with the other turret.
- e. Providing access to turret controls for both foam and dry chemical turrets to the driver and crew members.

18. Under-Truck Nozzle

Undertruck nozzles shall be mounted under the truck and controlled from the cab to protect the bottom of the vehicle and the inner sides of the wheels and tires with foam solution discharged in a spray pattern.

The ARFF vehicle shall be provided with at least four (4) under truck nozzles with the capacity of at least 57 lpm (15 gpm) each. The nozzle shall be located to protect the under-truck area as well as the wheels and tires from ground fire and shall be actuated from the cab.

19. Preconnected Handlines

19.1 Preconnected handlines shall be those handlines for discharging water or foam, or both, intended for use as primary ARFF equipment.

19.2 The ARFF vehicles shall be provided on each side of the lower body of the compartment with:

- a) One (1) pre-connected handline, 1.5" dia. x 50 ft. double jacket delivery hose with pistol grip nozzle; and
- b) One (1) water and foam branch-pipe, 1.5" dia. with output of 360 lpm (95 gpm).

19.2.1 All other handlines that are installed on the vehicle shall not be considered to be preconnected handlines.

19.3 Each preconnected handline compartment shall be located so that the distance between the handline nozzle and the ground, step, or surface upon which the operator stands to initiate the pulling of the handline from the reel or top layer of collapsible hose is not more than 1.8 m (6 ft) above the surface.

19.4 Each handline shall have the following characteristics:

- (1) Be equipped with a pistol grip shutoff-type nozzle designed to discharge both foam and water in accordance with the performance criteria in Annex C of this TOR.
- (2) Meet the requirements of applicable NFPA or EN standards.

- 19.5 Collapsible handlines shall meet the requirements of applicable NFPA or EN standards and Annex C of this TOR.
- 19.6 Each collapsible handline shall have the following characteristics:
- (1) Be equipped with a pistol grip shutoff-type nozzle designed to discharge foam and water in accordance with the performance criteria in Annex C of this TOR.
 - (2) Meet the requirements of applicable NFPA or EN standards.
- 19.7 Hose storage areas shall have the following characteristics:
- (1) Be fabricated from noncorrosive material and designed to drain.
 - (2) Be smooth and free from all projections that might damage the hose.
 - (3) Have no other equipment mounted or located where it can obstruct the removal of the hose.
- 19.8 The discharge control to each handline shall be adjacent to the handline and accessible to the person using the handline.

20. Preconnected Dual Agent Reeled Handline

- 20.1 The ARFF vehicle shall be provided with a preconnected dual agent reeled handline located in a lower body compartment. The reel shall hold a minimum of 30m of 2.54 cm. dia. (100' of 1" dia.) twinned booster hose with dual agent nozzle for water, foam solution and dry chemical agent.
- 20.2 The nozzle shall be capable of flowing at least 227 liters per minute (60 gpm) straight stream and dispersed pattern. The nozzle shall also be capable of discharging 2.3 kgs./sec. of dry chemical powder. A manual/automatic reel rewind shall also be provided.
- 20.3 Hose reel shall have the following characteristics:
- (1) Be designed and positioned to allow hose reel removal by a single person from any position in a 120-degree horizontal sector.
 - (2) Be designed to prevent the hose from unreeling when not desired.
 - (3) Have power rewind with manual override.
- 20.4 The nozzle holder, friction brake, rewind controls, and manual valve control shall be accessible to the person using the hose reel.

21. Complementary Agent System

The ARFF vehicle shall be provided with 250kg capacity of Dry Chemical System mounted on the vehicle with pressure valve, purge valve, relief valve.

The propellant agent shall be dry nitrogen gas and shall be sufficient to discharge two (2) loads of Dry Chemical Agent.

- 21.1 Dry Chemical Container. The dry chemical container shall be constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, or equivalent, and shall be so stamped.
- 21.1.1 All piping and fittings shall conform to the appropriate ASME, or equivalent, code to withstand the working pressure of the system.
- 21.1.1.1 The design of the piping and valving shall provide the desired flow of gas into the system and the minimum amount of restriction from the chemical container(s) to the hose connection.
- 21.1.1.2 Where more than one hose line is provided, piping and fittings shall be sized and designed so that there is equal flow to each line, regardless of the number of lines placed in operation.
- 21.1.2 Provisions shall be made for purging all piping and hose of dry chemical after use without discharging the dry chemical remaining in the dry chemical container(s).
- 21.1.2.1 Provisions also shall be made for the depressurization of the dry chemical container(s) without the loss of the remainder of the dry chemical.
- 21.1.2.2 A pressure gauge shall be provided that indicates the internal pressure of the agent storage container(s) at all times.
- 21.1.3 The system shall have the following characteristics:
- (1) Be designed to ensure fluidization of the dry chemical at the time of operation;
 - (2) Include a manual operating feature where any design includes the movement of the chemical container(s) to fluidize the contents.
- 21.1.4 A check valve shall be provided in the gas piping to prevent the extinguishing agent from being forced back into the propellant gas line.
- 21.1.5 A means of pressure relief conforming to appropriate ASME codes, or equivalent, shall be provided for the dry chemical container and piping to prevent over-pressurization in the event of a malfunction in the propellant gas regulator system or in the event the container is involved in a severe fire exposure.
- 21.1.6 The fill opening in the dry chemical container shall have the following characteristics:
- (1) Be located so that it is easily accessible for recharging and necessitates a minimum amount of time and effort to open and close;
 - (2) Allow for filling to be accomplished without the removal of any of the extinguisher piping or any major component.

21.1.7 Identical quick-acting controls shall be provided to pressurize the dry chemical agent system from the cab of the vehicle and at the handline.

21.1.8 The pressure container shall be designed to allow hydrostatic testing.

21.2 Dry Chemical Propellant.

21.2.1 The propelling agent shall be dry nitrogen.

21.2.2 All propellant gas cylinders and valves shall be designed, constructed, and marked in accordance with U.S. DOT, or equivalent, requirements or regulations.

21.2.3 The propellant gas supply shall be sized to provide the capability to expel the fire-fighting agent, as well as to purge all piping and hose lines after each use.

21.2.4 The design of the propellant source shall provide for quick and easy replacement after each use.

21.2.5 A pressure gauge to indicate the pressure on the propellant gas source at all times shall be provided.

21.2.6 Cylinder valves, gauges, and piping shall be arranged to preclude accidental mechanical damage.

21.3 Dry Chemical Pressure Regulation.

21.3.1 Pressure regulation shall be designed to reduce the cylinder pressure automatically and to hold the propellant gas pressure at the designed operating pressure of the dry chemical container(s).

21.3.2 All pressure-regulating devices shall be sealed or pinned at the designed operating pressures after final adjustment by the system manufacturer.

21.3.3 Pressure-regulating devices shall be equipped with a spring-loaded relief valve that relieves any excess pressure that develops in the regulator.

21.3.4 The pressure regulator shall be permitted to be of a type without pressure indicating gauges.

22. Electrical System

The ARFF vehicle electrical system (24 V) shall conform to the NFPA 414 2020 Edition or equivalent standards.

23. Lighting and Electrical Equipment

The ARFF vehicle shall be provided with the following:

- a) Electronic siren with public address system and front mounted speaker
- b) Strobe lights
- c) Blue LED strobe beacon light
- d) Deck lights
- e) Fog and Flood lights
- f) Stop, turn and back up lights with electric back up alarm
- g) Compartment lights
- h) Step and ground lights
- i) Door ajar alarm

23.1 Lighting equipment shall be installed in conformity with local road regulations, where practicable, and shall include the following:

- (1) Headlights with upper and lower driving beams. A control switch that is readily accessible to the driver shall be provided for beam selection.
- (2) In addition to dual taillights and dual stop lights, a minimum of one additional stop light located high up on the rear of the vehicle.
- (3) Self-canceling turn signals, front and rear, with a steering column-mounted control and a visual and audible indicator. A four-way flasher switch shall be provided.
- (4) Adequate reflectors and marker and clearance lights furnished to describe the overall length and width of the vehicle.
- (5) Engine compartment lights, non glare type, arranged to illuminate both sides of the engine, with individual switches located in the engine compartment. Service lighting shall be provided for engine, pump and foam proportioning system, as well as for the engine compartment.
- (6) Lighting for all top-deck working areas.
- (7) At least one backup light and an audible alarm with a minimum of 97 dBA installed in the rear of the body.

23.2 A warning siren shall be provided that has a sound output of not less than 95 dBA at 30.5 m (100 ft) when measured directly ahead of the siren and not less than 90 dBA at 30.5 m (100 ft), measured at 45 degrees on either side.

23.2.1 The siren shall be mounted to allow maximum forward sound projection but shall be protected from foam dripping from the turret or water splashed up by the tires.

23.2.2 The siren unit shall consist of the following functions as a minimum: public address, wail, and yelp.

23.2.3 A selector switch shall be mounted within reach of the driver that will allow the operation of the vehicle's horn and the siren from the horn button in the steering wheel.

23.3 A horn shall be mounted at the front part of the vehicle, with the control positioned so that it is readily accessible to the driver.

23.4 Exterior Emergency Warning Lights.

- 23.4.1 A master switch for all exterior emergency warning lights shall be provided in the cab within easy reach of the driver.
- 23.4.2 Emergency warning light(s) shall be mounted on the top of the vehicle and shall be visible for 360 degrees in a horizontal plane.
 - 23.4.2.1 The emergency warning light(s) shall be mounted so as to also be visible from the air.
 - 23.4.2.2 The emergency warning lights shall be Blue-colored rotating beacon type.
- 23.4.3 Two alternating flashing emergency warning lights shall be mounted at the rear of the vehicle as far apart as practical.
 - 23.4.3.1 These lights shall not be mounted any higher than 1828.8 mm (72 in.) above ground level.
 - 23.4.3.2 Rear emergency warning lights shall be LED flasher type.
- 23.4.4 Two alternating flashing emergency warning lights shall be mounted at the front of the vehicle as far apart as practical.
 - 23.4.4.1 These lights shall not be mounted any higher than 1828.8 mm (72 in.) above ground level.
 - 23.4.4.2 Front emergency warning lights shall be LED flasher type.
- 23.4.5 The complete emergency warning light system shall require no more than a combined total of 12 volt 40 amps or equivalent for other voltages.

24. Power Source Generator

Power source generator suitable for the rescue equipment shall be provided with an output capacity of not less than 5kva. It shall be equipped with electric and manual starter.

25. Camera System

The ARFF vehicle shall be provided with a forward and back camera system.

26. Radio

A four (4) channel VHF/FM radio shall be mounted in the cab for two-way voice radio communication linking with the fire station, control tower, and all other aircraft fire and rescue vehicle.

27. Vehicle Paint Finish

The ARFF vehicle shall be painted and marked to comply with the painting and marking standards for ICAO, NFPA and other vehicle related painting standards and in accordance to the End-user's instructions.

28. Metal Finish.

- 28.1 All exposed ferrous metal surfaces that are not plated or of stainless steel or that are not otherwise treated to resist corrosion shall be cleaned thoroughly and prepared and shall be painted in the color(s) specified by the End-user.
- 28.2 If nonferrous body components are furnished, the purchaser shall specify which surfaces are to be painted.
- 28.3 The paint, including the primer, shall be applied in accordance with the paint manufacturer's recommendation.
- 28.4 Paint finish shall be selected for maximum visibility and shall be resistant to damage from fire-fighting agents.
- 28.5 Dissimilar metals shall not be in contact with each other.
- 28.6 Metal plating or metal spraying of metals of dissimilar base to provide electromotively compatible abutting surfaces shall be permitted.
- 28.7 The use of dissimilar metals separated by suitable insulating material shall be permitted. In systems where bridging of insulation materials by an electrically conductive fluid can occur, dissimilar metals shall not be permitted.
- 28.8 Materials that deteriorate when exposed to sunlight, weather, or operational conditions normally encountered during service shall not be used or shall have a means of protection against such deterioration that does not prevent compliance with performance requirements.
- 28.9 Protective coatings that chip, crack, or scale with age or extremes of climatic conditions or when exposed to heat shall not be used.
- 28.10 The use of proven, nonmetallic materials in lieu of metal shall be permitted, provided such use contributes to reduced weight, lower cost, or less maintenance and there is no degradation in performance or increase in long-term operations and maintenance costs.

29. Lettering, Numbering and Striping

Vehicle lettering, numbering and reflective striping shall be provided in accordance with the End-user's instructions.

30. Towing Connections

The ARFF vehicle must be equipped with towing connections at the front and at the rear, whose forces applicable correspond to the total mass of the vehicle load.

31. Manuals

The ARFF vehicles shall be provided with three (3) sets of the following manuals bound in hardcover. Two copies shall be provided for the end-user and one copy for the supplier (in English language). An electronic file in readable digital format shall also be provided to the End-user. These manuals shall cover the entire vehicle and shall contain the following information:

31.1 Operators Manual

- a. Operating instructions shall include all information required for operation of the vehicle, vehicle components, firefighting systems, and integral vehicular options.
- b. The location and function of all controls and instruments shall be covered by illustrations and descriptions.
- c. These instructions, as a minimum, also shall include the following: (1) Complete description of the vehicle and special equipment (2) Preparation for use of the vehicle upon receipt (3) Daily maintenance and mission readiness checks to be performed by the operator (4) Periodic operator inspection.

31.2 Service Manual

- a. The service manual shall contain the regular maintenance schedule including operating hours, mileage, and cycle time.
- b. The repair and overhaul instructions shall be factual, specific, concise, and clearly worded.
- c. The instructions shall cover such typical maintenance and repair operations as troubleshooting, adjustment procedures, minor and major repairs and overhaul, removal and replacement of units, assemblies and subassemblies, and complete instructions for disassembly and reassembly of components.
- d. The instructions also shall include data that include tolerances, specifications, and capacities.
- e. Illustrations, wiring diagrams, and exploded views shall be used to clarify text and shall appear as close to the related text as possible.
- f. Special tools needed for the repair and overhaul of the equipment shall be specified and illustrated.
- g. The service manual shall contain a suitable index.

31.3 Parts Manual

- a. The parts list shall include illustrations and exploded views necessary for the proper identification of all parts, assemblies, and subassemblies.
- b. Assemblies or components shall be shown in illustrations and shall be identified by reference numbers that correspond to the reference numbers in the parts list.

- c. The size, thread dimensions, and special characteristics shall be given on all nonstandard nuts, bolts, washers, grease fittings, and similar items.
- d. The parts identification manual shall provide the description and quantity of each item used per vehicle.
- e. The parts identification manual shall contain a numerical index.

- 31.4 Guarantee Certificate
- 31.5 Operator instruction for the chassis
- 31.6 Water/foam diagram
- 31.7 Pneumatic connection diagram
- 31.8 Axle weight distribution system

32. Vehicle Information Data Plate

A data plate that contains, as a minimum, all the following information:

- a. Manufacturer
- b. Vehicle make and model year
- c. Drive Type: 6x6
- d. Front axle loading (kg/lbs)
- e. Second axle loading (kg/lbs)
- f. 3rd axle loading (if applicable)
- g. 4th axle loading (if applicable)
- h. Tire manufacturer
- i. Tire model
- j. Tire pressure (kPa/psi)
- k. Front wheel track (cm/in.)
- l. Rear wheel track (cm/in.)
- m. Crew capacity (number of personnel)
- n. Fuel tank capacity (L/gal)
- o. Water tank capacity (L/gal)
- p. Foam tank capacity (L/gal)
- q. DCP capacity (kg/lbs)
- r. GVWR

33. Rescue Equipment

The ARFF vehicle shall be provided with the following equipment for rescue operations per ICAO Doc 9137 Chapter 5:

Equipment Scope	Equipment item	No. of pcs/units (CAT 8-10)
Forcible Entry Tools	Prying Tool (Hooligan, Biel Type)	2
	Crowbar 95cm	2
	Crowbar 1.65m	2
	Axe, Rescue Large Non Wedge Type	2

	Axe, Rescue Small Non Wedge or Aircraft Type	4
	Cutter Bolt 61cm	2
	Hammer 1.8kg – Lump or Club Type	2
	Chisel Cold 2.5cm	2
A Suitable Range of Rescue/Cut-In Equipment Including Powered Rescue Tools	Hydraulic/Electrical (or Combination) Portable Rescue Equipment	2
	Powered Rescue Saw Complete with Minimum 406mm Diameter Spare Blades	2
	Reciprocating/Oscillating Saw	2
A Range of Equipment for The Delivery of Firefighting Agent	Delivery Hoses 30m Lengths X 50 And 64mm	22
	Foam Branches (Nozzles)	3
	Water Branches (Nozzles)	6
	Coupling Adaptors	3
	Portable Fire Extinguishers CO ² DCP (Dry Chemical Powder)	3 3
Self-Contained Breathing Apparatus-Sufficient to Prolonged Internal Operations.	Breathing Apparatus (BA) Set Complete with Facemask and Air Cylinder	One (1) set per Crew Member in Cab
	BA Spare Air Cylinder	
	BA Spare Facemask	
Respirators	Full Faced Respirators Complete with Filters	4
A Range of Ladders	Extension Ladder, Rescue and Suitable for Critical Aircraft	3
	Ladder General Purpose – Rescue Capable	2
Protective Clothing	Firefighting Helmet, Coats, Over Trouser (Complete with Braces), Boots and Gloves as A Minimum	Five (5) Sets Plus 100% Reserve Per Truck.
	Protective Goggles	3

Additional Items for Personal Protection	Flash Hoods	Five (5) Sets Plus 100% Reserve Per Truck.
	Surgical Gloves	1 Box
	Blanket Fire Resisting	2
Rope Lines	Rope Line Rescue 45m	2
	Rope Line General Use 30m	2
	Rope Line Pocket 6m	4
Communication Equipment	Portable Transceivers (Hand Held and Intrinsically Safe)	3
	Mobile Transceiver (Vehicle)	2 Base Radio
A Range of Hand Held/Portable Lighting Equipment	Hand Held Flashlight (Intrinsically Safe)	4
	Portable Lighting – Spot or Flood (Intrinsically Safe)	3
A Range of General Hand Tools	Shovel Overhaul	2
Rescue Tool Box and Contents	Hammer, Claw 0.6kg Cutters, Cable 1.6cm Socket Set Hacksaw, Heavy Duty Complete with Spare Blades Wrecking Bar 30cm Screwdriver Set Slotted and Phillips Heads Pliers, Insulated Combination 20cm Side Cutting 20cm Slip Joint – Multi Grip 25cm Seat Belt /Harness Cutting Tool Wrench, Adjustable 30cm Spanners, Combination 10mm – 21mm	Three (3) Rescue Tool Box and Contents
First Aid Equipment	Medical Trauma Kit	3
	Automated External Defibrillator (AED)	3
	Oxygen Resuscitation Equipment (ORE)	3
Miscellaneous Equipment	Chocks And Wedges – Various Sizes	2 Suitable Size for Fire Truck Tires
	Tarpaulin – Lightweight	3
	Thermal Imaging Camera (Handheld)	2

34. Certification

- A. Proof of compliance stating that the Cab of the offered vehicle meets the requirement of one of the following sets of standards (NFPA 414-2020, 4.12.3.6):
- (1) SAE J2420, COE Frontal Strength Evaluation — Dynamic Loading Heavy Trucks, and SAE J2422, Cab Roof Strength Evaluation — Quasi-Static Loading Heavy Trucks; **or**
 - (2) ECE Regulation number 29, Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle

35. Self-Contained Breathing Apparatus (SCBA) Refilling Machine

- 35.1. Each offered ARFF vehicle shall be provided with one (1) unit Self-Contained Breathing Apparatus (SCBA) Refilling Machine appropriate to the supplied SCBA cylinder units

SECTION III. VEHICLE TESTING

1. The prototype vehicle, prior to Factory Acceptance Test, must undergo comprehensive testing to confirm compliance with all performance and safety standards in accordance with NFPA 414-2020 Chapter 6.3 (Prototype Vehicle Tests). This includes assessments of the vehicle's chassis, engine, electrical systems, and firefighting equipment. Testing requirements can be found in **Annex D** of the TOR.
2. The manufacturer shall ensure that the performance requirements have been achieved with the design. Calculated performance capability shall not be substituted for an actual prototype test.
3. Documentary evidences of successful prototype vehicle testing shall be submitted prior to Factory Inspection and Acceptance stage.
4. The vehicles must meet or exceed the performance metrics outlined in NFPA 414-2020 Chapter 6.3 (Prototype Vehicle Tests) and 6.4 (Operational Tests), respectively. Any deficiencies identified during the testing process must be addressed, corrected, and the vehicle retested to ensure compliance.
5. Operational tests shall be performed by the manufacturer during the Factory Inspection and Acceptance Test stage at the manufacturer's facility in the presence of the End-user representative/s. All expenses shall be shouldered by the winning bidder.
6. Operational tests shall be performed by the manufacturer at the manufacturer's facility which shall consist of the following:
 - 6.1. Vehicle Testing, Side Slope (Refer to Chapter 6.4.1 of NFPA 414-2020)
 - 6.2. Weight/Weight Distribution. (Refer to Chapter 6.4.2 of NFPA 414-2020)
 - 6.3. Acceleration (Refer to Chapter 6.4.3 of NFPA 414-2020)

- 6.4. Top Speed (Refer to Chapter 6.4.4 of NFPA 414-2020)
- 6.5. Brake Operational Test (Refer to Chapter 6.4.5 of NFPA 414-2020)
- 6.6. Air System/Air Compressor Test (Refer to Chapter 6.4.6 of NFPA 414-2020)
- 6.7. Agent Discharge Pumping Test (Refer to Chapter 6.4.7 of NFPA 414-2020)
- 6.8. Dual Pumping System Test. (Refer to Chapter 6.4.8 of NFPA 414-2020)
- 6.9. Pump and Maneuver Test (Refer to Chapter 6.4.9 of NFPA 414-2020)
- 6.10. Hydrostatic Pressure Test. (Refer to Chapter 6.4.10 of NFPA 414-2020)
- 6.11. Foam Concentration test (Refer to Chapter 6.4.11 of NFPA 414-2020)
- 6.12. Primary Turret Flow Rate Test (Refer to Chapter 6.4.12 of NFPA 414-2020)
- 6.13. The operation, including the extension of any hose-line, of the complementary agent system, where specified;
- 6.14. The conduct of replenishment procedures;
- 6.15. The conduct of a flushing procedure on completion of foam production;

This series of tests is additional to any visual inspection of a vehicle to appraise design features, finishes, treatments and other aspects required by the specification. Where a number of identical vehicles are ordered it may be necessary to perform the tests above for the first production vehicle only. Acceleration and cruising speed tests should be conducted at the normal operating temperatures of the vehicle.

7. Certification Requirements

- A. Quality Assurance – The manufacturer shall provide quality assurance certification documents for the manufacturing processes of each vehicle.
- B. Component Manufacturer’s Certification – Manufacturer certification shall incorporate documentation for any new technology and shall certify that any of the components on the following list are fitted for use on all ARFF vehicles:
 - a. Engine
 - b. Transmission
 - c. Axles
 - d. Transfer case
 - e. Wheels
 - f. Tires
 - g. Handline hose with couplings attached
 - h. Premixed storage container
 - i. Premixed system pressure-relief valve
 - j. Propellant gas cylinder
 - k. Propellant gas cylinder regulating device
 - l. Complementary agent storage container
 - m. Complementary agent pressure-relief device
- C. The cooling system shall be certified by the engine manufacturer to satisfy all conditions at all ambient temperatures encountered at the airport for both the engine and the transmission.
- D. The brake system shall be certified by the vehicle manufacturer to satisfy the service brake, emergency brake, and grade-holding performance requirements for the corresponding class of vehicle.

- E. Where the vehicle is equipped with an air brake system, the vehicle manufacturer shall provide itemized, certified data relative to the air system as follows:
 - a. Total reservoir capacity
 - b. Total required volume (12 times the total combined brake chamber volume at full stroke)
 - c. Quick buildup system capacity
 - d. Quick buildup system pressure needed to release the spring brakes
- 8. The manufacturer of the vehicle shall demonstrate to the purchasing authority or its designee the care and maintenance and operational capability of the vehicle.
- 9. These tests shall be accomplished on a vehicle prior to the vehicle being delivered to the end user.

SECTION IV. FINAL INSPECTION, TESTING AND COMMISSIONING

Upon delivery of the ARFF Vehicles, CAAP authorized representative/s shall conduct final inspection.

The winning bidder shall conduct testing and commissioning of the newly delivered ARFF Vehicles' units components which shall be witnessed by CAAP authorized representative/s.

SECTION V. ACCEPTANCE CRITERIA

The following requirements, in addition to the documentary requirements by this Authority, shall form part of the Acceptance Criteria which shall be met by the winning bidder prior to final acceptance of vehicles:

- 1. Deliverables
 - A. Fast-moving items/spare parts as listed in Section I.9 of this TOR.
 - B. Five (5) sets of periodic and/or time-change spare parts as per Section I.21 of this TOR.
 - C. Personnel Training as per Section VIII of this TOR.
- 2. Certification Requirements
 - A. Authenticated letters of agreement with OEM spare parts suppliers to certify the ready availability of the same if the winning bidder is not the manufacturer of spare parts to be provided to CAAP (as per Section I.19 of this TOR).
 - B. Proof of complete filing of vehicle registration requirements to the LTO as stated in Section I.22 of this TOR.

SECTION VI. LIQUIDATED DAMAGES

When the supplier fails to satisfactorily deliver goods under the contract within the specified delivery schedule of eighteen (18) months from the issuance of the Notice to Proceed, inclusive

of duly granted time extensions, if any, or fails to adhere to the warranty obligations and other relevant provisions as herein set forth, the supplier shall be liable for damages for the delay and shall pay the procuring entity liquidated damages, *not by way of penalty*, an amount equal to one-tenth (1/10) of one percent (1%) of the cost of the delayed goods scheduled for delivery for every day of delay until such goods are finally delivered and accepted by the procuring entity concerned.

Once the cumulative amount of liquidated damages reaches ten percent (10%) of the amount of the total Contract Price, CAAP may rescind or terminate the contract, without prejudice to other causes of action and remedies available under the circumstances.

SECTION VII. WARRANTY PROVISIONS

1. Winning bidder shall provide a warranty of five (5) years for parts, labor, and maintenance of the delivered ARFF vehicles which shall be covered by a special bank guarantee equivalent to five percent (5%) of the total Contract Price. The said amount shall be released after the lapse of the 5-year warranty period, provided that all the terms and conditions imposed under this TOR have been fully met by the winning bidder.
2. Comprehensive Full Vehicle Warranty

A. Coverage

Each vehicle shall have a full warranty period of five (5) years, counting from the date of registration of the vehicle.

During this 5-year comprehensive warranty period, the winning bidder undertakes to ensure the good condition of the vehicles, for them to serve the purpose for which they are intended.

The scope of this comprehensive warranty will include preventive and corrective maintenance of the vehicle, as well as the replacement and/or modification of defective elements, all free of charge to CAAP and within the set period of 5 years.

The comprehensive warranty includes the following works:

- Preventive conservation work
- Corrective maintenance work
- Adaptation works due to technological progress
- Extraordinary work

This work will be carried out under the following conditions:

- During the period of validity of the comprehensive warranty, the winning bidder undertakes to take all the measures and carry out the necessary preventive or corrective work to ensure that the vehicles are in perfect working order and operability.

- The winning bidder will provide all the human and material resources to be able to carry out the fulfillment and development of the works included in the comprehensive guarantee of the vehicles, regardless of the means available to the Airports.
- The winning bidder must bear in mind that it will carry out all preventive and corrective maintenance work throughout the comprehensive warranty period, always including labor, travel to the airport and maintenance of technical staff, as well as all the spare parts, parts and consumables necessary (oils, filters, lubricants, etc.) to carry out these operations in accordance with the instructions. Replacement periods (due to time or mileage), spare parts and consumables established by the manufacturer and no spare parts other than those stipulated by the manufacturer are accepted under any circumstances.
- In general, preventive and corrective work on the vehicle will be carried out at the airport unless there is a force majeure event that requires the vehicle to be transferred to a workshop. In this case, if the vehicle is unable to travel by its own means, the transfer of the vehicle will be carried out and paid for by the winning bidder with the consent of the airport management.
- The winning bidder will be responsible for the formalities and costs of access to the airport grounds (obtaining accreditation cards) and the costs of daily vehicle insurance in case it is necessary to access the air side with a workshop vehicle.
- In the event that it is not possible to complete all the established works due to lack of resources, all the necessary visits will be carried out until the works are completed, all at no cost to CAAP.
- The removal of all generated waste and consumables from the airport will be the responsibility of the winning bidder.
- The winning bidder shall undertake to guarantee the vehicle supplied by it against any malfunction or breakdown attributable to defects in the manufacture or design of the vehicle, both in the systems built by it and those purchased.
- In the event of repetitive breakdowns caused by design or manufacturing errors during the term of the comprehensive warranty, the winning bidder shall establish the necessary means to correct the error.
- In the event of an agreement being established between the winning bidder and CAAP to carry out a one-off repair within the full warranty period, CAAP may carry out the repair of the vehicle in a workshop agreed with the winning bidder, charging all repair costs to the winning bidder. Under no circumstances will CAAP be held liable for any damage caused as a result of the repair work carried out on the equipment.
- In the event that a breakdown during the comprehensive warranty period is not rectified without a clearly justified cause within a maximum period of one month from the date of notification of the breakdown by the Airport, CAAP may carry out the repair of the fault in the workshop it deems appropriate

without it being necessary to agree with the winning bidder, charging all repair costs to the winning bidder. Under no circumstances will CAAP be held liable for any damage caused as a result of the repair work carried out on the equipment.

- The winning bidder undertakes to have a computer application as the main management tool in which all the maintenance work carried out on each vehicle is recorded and to update them when modifications are made. The information managed or generated will be available to CAAP upon request.
- In the event of non-compliance with any of the conditions indicated above, the winning bidder will be subject to Liquidated Damages as described in Section VI of this TOR.
- Labor shall include minor and major repairs such as, but not limited to, diagnostic and troubleshooting repairs, and replacement of fast moving items, spare parts, and/or major components to be provided to CAAP at no additional cost to the latter within the warranty period.
- CAAP shall promptly notify the winning bidder in writing of any claims arising against the warranty. Upon receipt of such notice, maintenance and/or minor repairs shall be performed by the winning bidder within three (3) days, while major repairs shall be performed within thirty (30) days from notification.

B. Work not included in the Comprehensive Warranty Period

1. During the comprehensive warranty period, the following works will be exempt:
 - Repair of damage caused to the vehicle due to negligent use, vandalism or improper use of the vehicle;
 - All oils, fluids, greases, coolants that have been used by the airport for refilling and checking levels in the vehicle outside of its periodic inspections;
 - Changing Tires;
 - Change of vehicle batteries unless their damage or wear has been caused by the breakdown of another component of the vehicle;
 - Change of cabin windows due to negligent blows by CAAP personnel;
 - The daily and weekly inspections that are carried out at the airport's Fire Station as a regular routine of the service established by CAAP;
 - Repair of sheet metal and paint blows on the bodywork; Replacement or modification of vinyls, anagrams or logos on the outside of the bodywork unless they are damaged due to being defective from the outset;
 - Repairs to the vehicle due to accident or total loss;

- Repair of damage to the vehicle caused by adverse weather conditions such as strong winds, rain, floods or hail;
- Exterior and interior cleaning of the vehicle as well as equipment and tools;
- Repairs to communications systems except in the event of a failure that occurs within the warranty period granted by the manufacturer;
- Repairs to the rescue and salvage equipment and tools with which the vehicle is equipped, except in the event of a failure that occurs within the warranty period granted by its manufacturer;
- Replacement of extinguishing agents (water, foam concentrate and chemical powder) that have been used in maintenance, tests or training courses carried out with the vehicle;
- Refilling and Inspections of Nitrogen Cylinders of Powder Equipment;
- The maintenance or repair of the equipment that CAAP incorporates into the vehicle without the authorization of the winning bidder will not be included, unless both parties agree to it;
- Modifications made to the vehicle by the airport that have not been authorized by the manufacturer; and
- Minor repairs that are carried out outside of periodic inspections and that have a cost of less than Php 2,000.00 in parts or less than one hour of work.

C. Preventive Conservation Work

It comprises the set of operations that must be carried out periodically on vehicles, in order to prevent the occurrence of breakdowns, reduce their intensity and extend the useful life of the vehicle under normal working conditions. These works will be:

1. Chassis and gearbox maintenance:
 - The preventive maintenance work scheduled by the manufacturer of the chassis and gearbox for those five (5) years will be carried out, including labor, travel to the airport and maintenance of technical staff and all the necessary spare parts, parts and consumables (oils, filters, lubricants, etc.) to carry out these operations according to the manufacturers' instructions.
 - A work plan will be delivered with the offer that will include all the works included in the comprehensive guarantee at the established periodicities.
 - In each preventive maintenance operation, a forced regeneration of the particulate filter must be carried out if necessary
 - Preventive work will be carried out in accordance with the manufacturer's instructions, replacement periods and original new parts,

and no spare parts other than those stipulated by the manufacturer will be accepted under any circumstances.

- **Frequency: the visit to all recipient airports shall be mandatory once every six (6) months, until the end of the warranty period.**

2. Maintenance of the fire-fighting installation and bodywork:

- The preventive conservation work scheduled for those five (5) years will be carried out both in the bodywork and in the fire-fighting installation, including labor, displacements and all the necessary consumables (oils, filters, lubricants, etc.) to carry out these operations according to the manufacturers' indications.
- The work plan stipulated by the manufacturer of the fire-fighting installation and bodywork included in the comprehensive warranty will be delivered with the offer with the established periodicities.
- Preventive work will be carried out in accordance with the manufacturer's instructions, replacement periods and original new parts, and no spare parts other than those stipulated by the manufacturer will be accepted under any circumstances.
- **Frequency: the visit to all recipient airports shall be mandatory once every six (6) months, until the end of the warranty period.**

D. Corrective Maintenance Work

The Winning Bidder undertakes to perform all corrective maintenance work and resolution of breakdowns in the vehicles that are necessary to maintain their full operability, performance and safety during the comprehensive warranty period.

The Winning Bidder may receive notices of breakdowns from the airport every day of the year. Repairs resulting from the preventive work in the previous section may also be subject to this maintenance.

In those cases in which the operability of the vehicle is compromised due to the malfunction of any element of the truck, the response must be in accordance with the response time established in these specifications.

In cases where the breakdown has a serious impact on the operation of the Airport, the winning bidder undertakes to adequately size the human and material resources to reduce the effects of the breakdown and restore normality, until the breakdown in question is completely repaired, and undertakes to apply the response time established in these specifications.

E. Adaptation Work due to Technological Advances

Within the comprehensive warranty period, adaptation work due to manufacturer's service campaigns and bulletins or technological advances that the manufacturer has applied to the vehicle, such as software updates, component replacements due to

safety campaigns, or any type of improvement in the vehicle approved by the manufacturer that involves an improvement in its performance, will be included.

Prior to the execution of these works, CAAP shall be informed of its scope for authorization and will not have any additional cost for CAAP.

F. Maintenance Work Carried Out by CAAP

Any maintenance or modification work on the vehicles that the airport wishes to carry out because they are not included in the contract must be brought to the attention of the winning bidder and must have his agreement in order to ensure that the aforementioned works do not affect the design, vehicle warranty and performance.

This work shall be carried out by a company that specializes in the specific work to be carried out, using original components and spare parts from the vehicle manufacturer if necessary in order not to interfere with the warranty of the vehicle.

To this end, the airport will communicate by email to the winning bidder the scope of the work to be carried out so that it can be analyzed and given the go-ahead for its execution. The winning bidder undertakes to provide the technical advice and supply of components that may be necessary for the airport to be able to carry out these works with the greatest diligence and quality.

G. Technical Maintenance Support

The winning bidder will reliably prove that it has its own technical organization in the Philippines, that it is sufficiently sized and capable of attending to the maintenance, overhaul, repair and supply of spare parts for these self-extinguishing vehicles and that it allows the response time established in Section VII.H to be met.

The vehicle manufacturer must certify the name of the company in Philippines authorized to carry out such maintenance work as well as a certificate that its technical staff has been instructed by the manufacturer in the maintenance of the vehicles and has all the appropriate technical means to do so.

The winning bidder shall have sufficient and adequate technical engineering and material capacity to carry out preventive and corrective maintenance work, without having to be provided with any means by CAAP.

The manufacturer shall have its own technical means and facilities where it can undertake the maintenance of the vehicles and carry out highly complex repairs to both the fire-fighting installation, as well as the bodywork and the chassis.

The winning bidder shall have in Philippines a complete fault diagnosis and data acquisition equipment to be able to connect it to the vehicle in the event of a breakdown, in order to be able to identify and locate the origin of the incident, as well as to be able to carry out the electronic programming of the different parameters of the vehicle and fire protection installation. Maintenance personnel shall have to

be trained in the use of the aforementioned diagnostic equipment. This diagnostic equipment will have the following functionalities:

- Fault diagnosis.
- Data display from the vehicle's electronic control units.
- Calibration and zeroing of electronic systems.
- Update programming of on-board fire protection systems and main equipment.

The following information must be included for its assessment:

- List of workshops and facilities in Philippines and their location to carry out vehicle maintenance.
- List of mobile repair equipment, workshop vehicles and tools in Philippines of the manufacturer of the fire-fighting installation (personnel and means).
- Own means for the maintenance of the fire-fighting system and bodywork (pump test bench, paint booth, specific tools for the repair of the fire-fighting installation as well as for the repair of water and foam tanks)

H. Response Time

The winning bidder must assume the following response times if incidents occur in the vehicles:

- a. Maintenance and/or minor repairs such as, but not limited to, troubleshooting and replacement of fast moving items/spare parts (fan belts, filters, etc.) – within three (3) days after notification; and
 - b. Major repairs – within thirty (30) days after notification.
- The warranty will also cover the conduct of **minor repairs** (including but not limited to: hydraulic cylinder repairs, fixing minor leaks, ensuring proper function, electrical repairs, addressing minor electrical faults, replacing damaged wires, lubrication of moving parts, joints, bearings and other critical components, belt and chain adjustments, removal and replacement of units, assemblies and subassemblies etc.) and **major repairs** (including but not limited to: component overhauls, repair, welding and fabrication of structural damage, gearbox repair, etc.)
 - In the event that the vehicle has minor defects that do not affect its performance, safety and operability, the winning bidder will coordinate with the airport to resolve the incidents, providing support to the airport technicians or the maintenance company that is present locally. If the problem still persists, the winning bidder will send a technician to the airport for resolution. These types of failures will have a maximum resolution time of one (1) month.

- In the event of a serious breakdown in a vehicle that renders it out of service, the winning bidder, once it receives the communication from the Airport, will immediately contact the Airport to find out the extent of the breakdown and will proceed to send a technician with appropriate means to the Airport within a maximum period of 72 hours to try to rectify the fault counted from the time of communication from the airport, all at no cost to CAAP.

Any incident that prevents the vehicle from complying with the services required by ICAO, that is out of service and/or that causes a downgrade of the ICAO RFFS category of the Airport is considered a serious breakdown.

I. Technical Support Communications

The winning bidder will establish a communications protocol between the airport and its technical service wherein the steps to be followed in the event of a mechanical incident are established.

Communication channels (contact telephone, e-mail, fax) will be designated for the treatment and management of all aspects related to the preventive and corrective maintenance of vehicles.

The winning bidder shall have a helpline that attends notifications of breakdowns or queries about the operation and maintenance of the self-extinguishing vehicle, and the helpline shall be accessible between 8:00 a.m. and 8:00 p.m. 365 days a year.

J. Spare Parts

The winning bidder will undertake to supply any spare part for this model of vehicle to the CAAP that requests it during a useful life of at least ten (10) years.

Spare parts are included during the equipment warranty period of five (5) years.

The maximum delivery time for any replacement of the components of the bodywork and the fire protection installation of the vehicle will be 15 working days. This aspect must be taken into account by the bidder and must have a sufficient stock of spare parts to comply with this point.

The winning bidder will provide at all times the material, consumables and spare parts necessary for the correct execution of the comprehensive warranty works. All spare parts must be original, signed by the equipment manufacturer, and new, so no versions or modifications of the original will be accepted and recycled spare parts will not be accepted.

In the event that any component cannot be repaired, the winning bidder undertakes to replace it with one of the same characteristics as the faulty one.

All the spare parts and materials necessary for the total coverage of possible contingencies that may arise from the maintenance and operation of the equipment subject to service are part of this service and must be available, complying with the deadlines defined in this specification.

The transport of all spare parts to the airports is the responsibility of the winning bidder, including defective returns.

It will be the responsibility of the winning bidder to clean and properly store all materials and to keep them in good condition until the termination of the contract.

K. Equipment, Machinery and Waste

The winning bidder will be responsible for all the tools and auxiliary means (light vehicles, vans, cranes, forklifts, ladders, platforms, etc.) necessary for the rapid and correct execution of the works. It will be the responsibility of the winning bidder to transfer personnel, tools and materials to the different service provision areas, as well as their surveillance and custody.

The winning bidder will be responsible for the removal from the airport of all waste generated during maintenance work (oils, filters, packaging, etc.). These works will be carried out by the winning bidder at no additional cost to CAAP, which may require the winning bidder to provide it with a copy of the documents accrediting the correct removal and management of the waste generated by an authorized manager.

Failure to comply with the provisions of this Section may be sanctioned under Section VI of these specifications.

SECTION VIII. PERSONNEL TRAINING

The winning bidder shall provide the following training to CAAP personnel:

- a. Two (2) CAAP ARFF personnel per recipient airport for training on operations and troubleshooting;
- b. Two (2) CAAP ARFF personnel per recipient airport for extensive maintenance training;
- c. All ARFF crew/personnel in airports of destination for On-Site Training on operations; and
- d. Five (5) recurrency trainings on extensive maintenance every two (2) years.

The vehicle manufacturer shall have its own personnel qualified to provide training in the operation and maintenance of the vehicle.

The winning bidder shall provide the necessary training to all Fire Service personnel at each destination airport.

At a minimum, four (4) training courses will be held, lasting three (3) days each and 8 teaching hours per day, for the number of people decided by CAAP in each case, and in which the handling, operations, troubleshooting and maintenance of the vehicle and its equipment will be taught.

In the event that CAAP decides that any of the courses of instruction has not been satisfactory, it may request the winning bidder to repeat or extend said training.

The programs, form of development and computer support must be submitted to CAAP for approval 1 month before the scheduled delivery date of the unit.

Each of the students will be given the didactic material that will be taught in the course.

It shall be mandatory to make edited training videos that explain the operation of the vehicle, including chassis, bodywork and fire protection installation. These videos will be delivered to CAAP as part of the training content. At a minimum, the vehicle manufacturer should include the following information:

- Vehicle start-up, gearbox handling, engine brake and handbrake management;
- Procedure for connecting the fire pump in Airport mode;
- Procedure for connecting the pump from the pump cabinet;
- Pump connection procedure in “Pump & Roll” mode;
- Using the Foam System;
- Cleaning procedure after the use of foam;
- Operation of the front monitor via the joystick;
- Operation of the ceiling monitor via the joystick;
- Operation of the ceiling monitor manually;
- Water suction procedure. Filling tank or using pressure outlets;
- Procedure for the use of the powder installation (pressurization, winder use, launching, N2 bottle pressure check and cleaning);
- Procedure for manually opening the solenoid valves of the fire protection system in the event of an electrical or pneumatic failure;
- Use of vehicle lights, work lights, priority lights, public address system and siren;
- Battery charging. Use of 230V auxiliary socket, battery charger and air compressor. Battery recharging via NATO socket; and
- Towing of the vehicle in the event of a breakdown.

All the expenses of each course, fuel, teaching staff, audiovisual media, as well as the didactic material and documentation for each of the attendees will be at the expense of the winning bidder.

CAAP will set the dates for each course, notifying them at least 15 days in advance.

Failure to comply with the provisions of this Section may be sanctioned under Section VI of these specifications.

SECTION IX. INFORMATION SYSTEM. REGISTRATION OF WORKS

The winning bidder must have a digital information system or database where all the information relating to the different preventive and corrective interventions on the vehicles during the warranty period will be stored.

The initial uploading of data and maintenance of the information will be at the expense of the winning bidder.

The information must be kept throughout the warranty period, delivering all this information annually to the destination airport and central office in digital format for archiving.

Likewise, in order for each Airport to be able to monitor the preventive and corrective work carried out on the vehicles, the winning bidder must always deliver a report or work report to the destination airport and central office within a maximum period of 7 working days after its completion. Such a report must include:

- Preventive and/or corrective work carried out on the chassis, bodywork and fire-fighting installation, detailing the operations carried out, consumables and spare parts used.
- List of materials, spare parts and oils used.
- List of anomalies detected during the work.
- Signature of the company and approval of the person in charge of the airport.

The tender may provide details of the maintenance management software application available to the bidder for evaluation.

Failure to comply with the provisions of this Section may be sanctioned under Section VI of these specifications.

SECTION X. COST OF PROJECT

EIGHT HUNDRED MILLION PESOS (PHP 800,000,000.00)

SECTION XI. ADDITIONAL INFORMATION

1. In the event of any ambiguity or conflict arising between the provisions of this TOR and the terms of the Bidding Documents issued by CAAP, the provisions of this TOR shall prevail.
2. Formats for the following documentation:
 - 2.1. Bid Guarantee format – *Manager’s check issued by Philippine Banks*
 - 2.2. Maintenance Facility format – *Manufacturer’s format*
 - 2.3. Manufacturer’s compliance certification that the ARFFs meet the latest standard ICAO, NFPA & FAA – *Any format certifying their ARFFs brand complies and meets the latest standard ICAO, NFPA & FAA standards.*
3. CAAP shall require the foreign bidders authenticated documents for this project.
4. CAAP will not pay in the form of letter of credit.

ANNEX A

DISTRIBUTION LIST – 8 UNITS 6X6 ARFF VEHICLES – CY 2024 GAA

Airport	Area Center	No. of Units
1. Laoag International Airport	I	1
2. Tuguegarao Airport	II	1
3. Busuanga Airport	IV	1
4. Bicol International Airport	V	1
5. Kalibo International Airport	VI	1
6. Tacloban Airport	VIII	1
7. General Santos International Airport	XI	1
8. Butuan Airport	XII	1
TOTAL		8

ANNEX B

FULLY LOADED VEHICLE PERFORMANCE PARAMETERS (SI UNITS)

Performance Parameters	Minimum Usable Capacity	
	Vehicle Water Tank Capacity > 6,000 Liters	Bidder's Specification
Side Slope Stability (degrees)	30	
Dynamic balance (kph), minimum speed on a (30m) radius circle	35.5	
Angle of approach (degrees)	30	
Angle of departure (degrees)	30	
Interaxle Clearance (degrees)	12	
Underbody Clearance (cm)	46	
Under-axle clearance at differential housing bowl (cm)	33	
Diagonal Opposite Wheel Motion (cm)	36	
Wall-to-wall Turning Diameter (cm)	<Three times the vehicle's overall length	
Maximum Acceleration Time from 0 to 80.5kph (seconds)	35	
Top Speed (kph)	≥ 113	
Service Brake:		
Stopping Distance		
From 33kph (m)	≤ 112	
From 64kph (m)	≤ 49 m	
Percent grade holding of fully loaded vehicle:		
Ascending	$\geq 50\%$	
Descending	$\geq 50\%$	
Emergency brake stopping distance at 64kph (m)	≤ 88	
Parking Brake:		
Percent grade holding for the parking brake:		

Ascending	$\geq 20\%$	
Descending	$\geq 20\%$	
Evasive maneuver test, NATO		
Document AVTP 03-16W (kph)	40	
“J” turn test at 46m radius (kph)	48	

ANNEX C

AGENT SYSTEM PERFORMANCE PARAMETERS (SI UNITS)

Performance Parameters	Minimum Usable Capacity	
	Vehicle Water Tank Capacity > 6,000 Liters	Bidder's Specification
1. Water Tank percent of deliverable water		
a. On level ground	100%	
b. On 20 percent slide slope	85%	
c. 30 percent ascending/descending grade	85%	
2. Turret(s) discharge	Total flow rate can be achieved using a roof turret, boom-mounted turret, bumper turret or a combination thereof	
2a. Roof Turret		
a. Total minimum flow rate (L/min) or	≥ 4731	
Individual flow rate of the roof turret, if used in combination w/ a bumper turret (L/min)	≥ 3785	
b. Entrained Stream pattern/distances		
i. Straight/far point (m)	≥ 70	
ii. Dispersed/far point (m)	≥ 21	
iii. Dispersed/width (m)	≥ 11	
2b. Boom-mounted turret		
a. Individual flow rate of the boom-mounted turret if used in combination w/ a bumper turret (L/min)	≥ 3785	
b. Entrained Stream pattern/distances		
i. Straight/far point (m)	≥ 58	
ii. Dispersed/far point (m)	≥ 21	
iii. Dispersed/width (m)	≥ 11	
2c. Bumper turret:	Can be used as the primary turret and must follow roof turret flows and ranges	

a.	Flow rate (L/min)	≥ 946	
b.	Straight stream distance (m)	≥ 46	
c.	Dispersed pattern distances:		
	i.Far point (m)	≥ 15	
	ii.Width (m)	≥ 9	
	iii.Near point (m)	Within 9m of front bumper	
2d.	Ground sweep nozzle	Where specified	
a.	Flow rate (L/min)	≥ 378 to ≤ 1135	
	b. Dispersed pattern distance:		
i.	Far point (m)	≥ 9	
	ii.Width (m)	≥ 3.5	
2e.	Under truck nozzle flow rate (L/min)	Where specified > 57	
2f.	Piercing nozzle flow rate (L/min)	Where specified ≥ 946	
3.	Number of water-foam handlines required per vehicle (select from following)	2	
3a.	Woven jacket water/foam handline		
a.	Nozzle flow rate (L/min)	≥ 360	
b.	Straight entrained stream distance	≥ 20	
c.	Dispersed stream pattern:		
	i.Range (m)	≥ 6	
	ii. Width (m)	≥ 4.5	
d.	Hose inside diameter (mm)	≥ 38	
e.	Hose length (m)	≥ 46	
3b.	Reeled water/foam handline:		
a.	Nozzle flow rate (L/min)	360 (≥ 227 for dual agent lines)	
b.	Straight entrained stream distance (m)	≥ 20	
c.	Dispersed entrained stream pattern:		
i.	Range (m)	≥ 6	
	ii. Width (m)	≥ 4.5	

d. Hose length (m)	≥ 46 (≥ 30 for dual agent lines)	
1. Complementary Agent		
a. Capacity (kg)	≥ 45	
4a. Dry Chemical Handline:	Where specified	
a. Discharge rate (kg./sec)	≥ 2.3	
b. Range (m)	≥ 7.5	
c. Hose length (m)	≥ 30	
4b. Dry Chemical Turret:	Above > 6000L	
a. Powder discharge rate (kg./sec)	≥ 7 and ≤ 10	
b. Powder range (m)	≥ 30	
c. Powder width (m)	≥ 5	
d. Stream range (m)	See 2a/2c	
e. Stream width (m)	≥ 5	
4c. Dry Chemical boom-mounted turret:	Where specified	
a. Discharge rate (kg./sec)	≥ 5.5 and ≤ 10	
b. Range (m)	≥ 30	
c. Width (m)	≥ 5	
4d. Halogenated agent handline:	Where specified	
a. Discharge rate (kg./sec)	≥ 2.3	
b. Range (m)	≥ 7.5	
c. Hose inside diameter (mm)	≥ 25.4	
d. Hose length (m)	≥ 30	

ANNEX D

Prototype Vehicle Testing Requirements based on NFPA 414-2020 – Standard on Aircraft Rescue and Firefighting Vehicles

1. Rated Water and Foam Tank Capacity Test (Chapter 6.3.6 of NFPA 414-2020)
2. Cornering Stability. (Chapter 6.3.7 of NFPA 414-2020)
3. Vehicle Dimensions. (Chapter 6.3.8 of NFPA 414-2020)
4. Driver Vision Measurement. (Chapter 6.3.9 of NFPA 414-2020)
5. Pump and Roll on a 40 Percent Grade (Chapter 6.3.10 of NFPA 414-2020)
6. Electrical Charging System (Chapter 6.3.11 of NFPA 414-2020)
7. Radio Suppression (Chapter 6.3.12 of NFPA 414-2020)
8. Gradeability Test (Chapter 6.3.13 of NFPA 414-2020)
9. Body and Chassis Flexibility Test (Chapter 6.3.14 of NFPA 414-2020)
10. Service/Emergency Brake Test (Chapter 6.3.15 of NFPA 414-2020)
11. Service/Parking Brake Grade Holding Test (Chapter 6.3.16 of NFPA 414-2020)
12. Steering Control Test (Chapter 6.3.17 of NFPA 414-2020)
13. Vehicle Clearance Circle Test. (Chapter 6.3.18 of NFPA 414-2020)
14. Agent Pump(s)/Tank Vent Discharge Test. (Chapter 6.3.19 of NFPA 414-2020)
15. Water Tank Fill and Overflow Test (Chapter 6.3.20 of NFPA 414-2020)
16. Flushing System Test (Chapter 6.3.21 of NFPA 414-2020)
17. Primary Turret Flow Rate Test (Chapter 6.3.22 of NFPA 414-2020)
18. Primary Turret Pattern Test. (Chapter 6.3.23 of NFPA 414-2020)
19. Primary Turret Control Force Measurement. (Chapter 6.3.24 of NFPA 414-2020)
20. Primary Turret Articulation Test (Chapter 6.3.25 of NFPA 414-2020)
21. Handline Nozzle Flow Rate Test (Chapter 6.3.26 of NFPA 414-2020)
22. Handline Nozzle Pattern Test. (Chapter 6.3.27 of NFPA 414-2020)
23. Ground Sweep/Bumper Turret Flow Rate Test. (Chapter 6.3.28 of NFPA 414-2020)
24. Ground Sweep/Bumper Turret Pattern Test. (Chapter 6.3.29 of NFPA 414-2020)
25. Undertruck Nozzle Test (Chapter 6.3.30 of NFPA 414-2020)
26. Foam Concentration/Foam Quality Test. (Chapter 6.3.31 of NFPA 414-2020)
27. Warning Siren Test. (Chapter 6.3.32 of NFPA 414-2020)
28. Propellant Gas (Chapter 6.3.33 of NFPA 414-2020)
29. Pressure Regulation (Chapter 6.3.34 of NFPA 414-2020)
30. AFFF Premix Piping and Valves (Chapter 6.3.35 of NFPA 414-2020)
31. Pressurized Agent Purging and Venting (Chapter 6.3.36 of NFPA 414-2020)
32. Complementary Agent Handline Flow Rate and Range (Chapter 6.3.37 of NFPA 414-2020)
33. Dry Chemical Turret Flow Rate and Range (Chapter 6.3.38 of NFPA 414-2020)
34. Cab Interior Noise Test (Chapter 6.3.39 of NFPA 414-2020)

Section VIII. Checklist of Technical and Financial Documents

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

- (a) Valid PhilGEPS Registration Certificate (Platinum Membership) (all pages) **in accordance with Section 8.5.2 of the IRR;**

Technical Documents

- (b) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid (Annex "E" Form 1); **and**
- (c) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents (Annex "E" Form 2); **and**
- (d) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission **or** Original copy of Notarized Bid Securing Declaration (Annex "F" Form 1); **and**
- (e) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable (Annex "F" Form 2); **and**
- (f) Original duly signed Omnibus Sworn Statement (OSS) **and** if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder. (Annex "F" – Form 3)

Financial Documents

- (g) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC) **or** A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

Class "B" Documents

- (h) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence **or** duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful. (Annex "E" – Form 3)

II. FINANCIAL COMPONENT ENVELOPE

- (i) Original of duly signed and accomplished Financial Bid Form (Section IX – Bidding Forms); **and**

- (j) Original of duly signed and accomplished Price Schedule(s) (Annex “G” – Forms 1 and 2).

Other documentary requirements under RA No. 9184 (as applicable)

- (k) *[For foreign bidders claiming by reason of their country’s extension of reciprocal rights to Filipinos]* Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.
- (l) Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.

Section IX. Bidding Forms

Bid Form for the Procurement of Goods

[shall be submitted with the Bid]

BID FORM

Date : _____

Project Identification No. : _____

To: *[name and address of Procuring Entity]*

Having examined the Philippine Bidding Documents (PBDs) including the Supplemental or Bid Bulletin Numbers *[insert numbers]*, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to *[supply/deliver/perform]* *[description of the Goods]* in conformity with the said PBDs for the sum of *[total Bid amount in words and figures]* or the total calculated bid price, as evaluated and corrected for computational errors, and other bid modifications in accordance with the Price Schedules attached herewith and made part of this Bid. The total bid price includes the cost of all taxes, such as, but not limited to: *[specify the applicable taxes, e.g. (i) value added tax (VAT), (ii) income tax, (iii) local taxes, and (iv) other fiscal levies and duties]*, which are itemized herein or in the Price Schedules,

If our Bid is accepted, we undertake:

- a. to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements of the Philippine Bidding Documents (PBDs);
- b. to provide a performance security in the form, amounts, and within the times prescribed in the PBDs;
- c. to abide by the Bid Validity Period specified in the PBDs and it shall remain binding upon us at any time before the expiration of that period.

[Insert this paragraph if Foreign-Assisted Project with the Development Partner:

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount	Purpose of Commission or gratuity
---------------------------	--------	-----------------------------------

(if none, state "None")]

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the Lowest Calculated Bid or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements pursuant to the PBDs.

The undersigned is authorized to submit the bid on behalf of *[name of the bidder]* as evidenced by the attached *[state the written authority]*.

We acknowledge that failure to sign each and every page of this Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Name: _____

Legal capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Date: _____

Annex “E”

Annex “E” Form 1.....	Statement of all Ongoing Contracts
Annex “E” Form 2.....	Statement of Single Largest Completed Contract
Annex “E” Form 3.....	Joint Resolution for JVA

{ ATTACH COMPANY LETTERHEAD/LOGO }

Statement of single largest COMPLETED contract similar to the contract to be bid

Name of Project: _____
 Location of Project: _____

Name of Company : _____
 Address of Company: _____

Name of Contract	a. Owner's Name b. Address c. Telephone No.	Nature of Work	Contractor's Role		Contract Amount at Award	a. Date Awarded b. Date of Contract c. Contract Duration d. Date Started e. Date Completed
			Description	%		

Submitted by: _____
 (Print Name & Signature)

Designation: _____

Date: _____

JOINT RESOLUTION

Whereas, _____ (Bidder / Name of Particular JV Partner), duly organized and existing under the Laws of the _____, with office address at _____, represented herein by its _____, _____, and _____ (Name of Particular JV Partner), duly organized and existing under the Laws of the _____, with main office address at _____, represented by herein by its _____, have entered into a Joint Venture (JV) Agreement to undertake the following project / contract:

(Name of Project / Contract)

Whereas, in order to facilitate the orderly execution and conduct of the contract that was entered into by the joint venture in the name of the joint venture, it is hereby resolved by the parties in the Joint Venture as follows:

1. To appoint _____ as the Authorized Managing Officer and Official Representative, to represent, to manage the Joint Venture and is empowered to enter in contract in the name of the Joint Venture, or to sign for any document in the name of the Joint Venture required by the (Procurement Agency) or any entities pursuant to the terms of the Joint Venture Agreement:
2. That, the parties agreed to make _____(Name of Particular Lead Partner) _____ as the Lead Partner of the Joint Venture and (Name of Authorized Officer) _____ as the Official Representative & Managing Partner of the Joint Venture, and are granted full power and authority to do, execute and perform any and all acts necessary and/or to represent the Joint Venture in the Eligibility Check, Bidding and Undertaking of the said contract in the name of the Joint Venture, as fully and effectively and the Joint Venture may do and if personally present with full power of substitution and revocation. _____ is fully authorized and empowered to sign any or all documents pertaining to the above stated project / contract in the name of the Joint Venture.
3. That the parties agree to be jointly and severally liable for their participation in the Eligibility Check, Bidding and Undertaking of the said contract.
4. That the terms of the JV Agreement entered into the parties shall be valid and is co-terminus with the final completion and turnover of the Name of Contract / Project to the agency of the government, which in this case, the (Name of Procurement Entity);

IN WITNESS THEREFORE, We hereby sign jointly this Joint Resolution this _____ day of _____, 20 ____ in _____.

Name of Bidder (Lead Partner)

Name of Bidder (Member Partner)

By: _____
Signature & Name of
Managing Officer

By: _____
Signature & Name of Authorized
Authorized Representative

Designation / Position

Designation / Position

Name of Bidder (Member Partner)

Name of Bidder (Member Partner)

By: _____
Signature & Name of
Managing Officer

By: _____
Signature & Name of Authorized
Authorized Representative

Designation / Position

Designation / Position

SIGNED IN THE PRESENCE OF:

A C K N O W L E D G E M E N T

REPUBLIC OF THE PHILIPPINES)
CITY OF _____)S.S.

BEFORE ME, a Notary Public, for and in the City of _____, Philippines,
this _____ day of _____, 20____ personally appeared the following persons:

NAME	Community Cert. No.	Date / Place of Issue
-------------	----------------------------	------------------------------

Representing to be the _____ of
_____ and _____ of
_____ respectively, known to me and
to me known to be the same persons who executed the foregoing instrument for and in behalf
of said corporations and who acknowledge to me that same is their free and voluntary act
and deed as well as of the corporations which they represent, for the uses, purposes, and
considerations therein set forth and that they are duly authorized to sign the same.

This Instrument consists of THREE (3) pages including this page wherein this
Acknowledgement is written and signed by the parties and their instrumental witnesses on
each and every page thereon.

WITNESS MY HAND AND NOTARIAL SEAL at the place and date hereinafter first
above written.

NOTARY PUBLIC

Doc. No. _____
Book No. _____
Page No. _____
Series of _____

Annex “F”

Annex “F” Form 1.....	Bid Securing Declaration
Annex “F” Form 2.....	Conformity with Technical Specifications as stated in Section VII
Annex “F” Form 3.....	Omnibus Sworn Statement
Annex “F” Form 4.....	Certification that the ARFF vehicles offered are compliant with CAAP’s technical requirements under the project’s TOR

Bid Securing Declaration Form

[shall be submitted with the Bid if bidder opts to provide this form of bid security]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BID SECURING DECLARATION
Project Identification No.: *[Insert number]*

To: *[Insert name and address of the Procuring Entity]*

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.
2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f), of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.
3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:
 - a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
 - b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
 - c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this ____ day of *[month]* *[year]* at *[place of execution]*.

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant

[Jurat]

[Format shall be based on the latest Rules on Notarial Practice]

{ ATTACH COMPANY LETTERHEAD/LOGO }

Technical Specifications

Item	Specification	Statement of Compliance

SUBMITTED BY:

Signature: _____

Printed Name: _____

Position: _____

Name of Company: _____

Date: _____

Omnibus Sworn Statement (Revised)

[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. *[Select one, delete the other:]*

[If a sole proprietorship:] I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

[If a partnership, corporation, cooperative, or joint venture:] I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. *[Select one, delete the other:]*

[If a sole proprietorship:] As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

[If a partnership, corporation, cooperative, or joint venture:] I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable);];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. [Select one, delete the rest:]

[If a sole proprietorship:] The owner or sole proprietor is not related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a partnership or cooperative:] None of the officers and members of [Name of Bidder] is related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a corporation or joint venture:] None of the officers, directors, and controlling stockholders of [Name of Bidder] is related to the Head of the Procuring Entity, Procurement Agent if engaged, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. [Name of Bidder] complies with existing labor laws and standards; and

8. [Name of Bidder] is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

- a. Carefully examining all of the Bidding Documents;
- b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
- c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
- d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the [Name of the Project].

9. [Name of Bidder] did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.

IN WITNESS WHEREOF, I have hereunto set my hand this ___ day of ___, 20__ at _____, Philippines.

*[Insert NAME OF BIDDER OR ITS AUTHORIZED
REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant*

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

Annex “F” Form 4 – Certification that the ARFF vehicles offered are compliant with CAAP’s technical requirements under the project’s TOR

(COMPANY LETTERHEAD)

(DATE)

CERTIFICATION

THIS IS TO CERTIFY THAT THE (ARFF VEHICLE BRAND) 6X6 AIRCRAFT RESCUE AND FIREFIGHTING VEHICLES OFFERED BY (NAME OF COMPANY) TO THE CIVIL AVIATION AUTHORITY OF THE PHILIPPINES (CAAP) ARE COMPLIANT WITH CAAP’S TECHNICAL REQUIREMENTS UNDER THE PROJECT’S TERMS OF REFERENCE.

(SIGNATURE OF AUTHORIZED REPRESENTATIVE)

(NAME OF AUTHORIZED REPRESENTATIVE)

(NAME OF COMPANY)

Annex “G”

Annex “G” Form 1	Goods Offered From Abroad
Annex “G” Form 2	Goods Offered From Within Philippines

CAAP-BAC-SF Annex “G” Form 1

{ ATTACH COMPANY LETTERHEAD/LOGO }

Price Schedule for Goods Offered from Abroad

For Goods Offered from Abroad

Name of Bidder _____ Project ID No. _____ Page ___ of ___

1	2	3	4	5	6	7	8	9
Item	Description	Country of origin	Quantity	Unit price CIF port of entry (specify port) or CIP named place (specify border point or place of destination)	Total CIF or CIP price per item (col. 4 x 5)	Unit Price Delivered Duty Unpaid (DDU)	Unit price Delivered Duty Paid (DDP)	Total Price delivered DDP (col 4 x 8)

Name: _____

Legal Capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

CAAP-BAC-SF Annex “G” Form 2

{ ATTACH COMPANY LETTERHEAD/LOGO }

Price Schedule for Goods Offered from Within the Philippines

For Goods Offered from Within the Philippines

Name of Bidder _____ Project ID No. _____ Page ___ of ___

1	2	3	4	5	6	7	8	9	10
Item	Description	Country of origin	Quantity	Unit price EXW per item	Transportation and all other costs incidental to delivery, per item	Sales and other taxes payable if Contract is awarded, per item	Cost of Incidental Services, if applicable, per item	Total Price, per unit (col 5+6+7+8)	Total Price delivered Final Destination (col 9) x (col 4)

Name: _____

Legal Capacity: _____

Signature: _____

Duly authorized to sign the Bid for and behalf of: _____

Republic of the Philippines



Government Procurement Policy Board