



DIRECTORATE GENERAL
FIRE SERVICES, HOME GUARDS & CIVIL DEFENCE,
ODISHA

SHORT TENDER CALL NOTICE
NO- 11/2018-19.

1. Sealed tenders are invited from the fabricators having own fabrication unit for fabrication of Water Tanker (15,000 Ltrs Capacity) and Mini Motor Fire Engine for Fire Service Organization during the year 2018-19.

SI No	List of Items	Approximate requirement
1	Fabrication of Water Tanker (15,000 Ltrs Capacity) on chassis model: - Tata LPT 2518/48 Tilt Sleeper Cab Chassis 6×2 BSI V	01 No.
2	Fabrication of Mini Motor Fire Engine on chassis model: - Ashok Leyland LCV Truck Partner 6 Tyre 3955 mm Wheel Base Cabin Chassis-17 feet.	22 Nos

2. Name of the items along with detail Technical Specifications, probable requirements against each item may seen from the website www.odisha.gov.in and www.odishafshgscd.gov.in. The quantity may vary during indent of the items depending upon budgetary allocation.
3. The tender document may be obtained: -
- On payment of `500/- (Rupees five hundred) only between 11.00 a.m to 5.00 p.m on each working day form the office of the under signed at the address given below.
 - By downloading from Govt. of Odisha website i.e. www.odisha.gov.in and Odisha Fire Service website i.e. www.odishafshgscd.gov.in.
4. The tender document shall be submitted in the office of the under signed duly signed by the authorized signatory in each page and duly authenticated with seal in token of having read, understood and accepted the terms and conditions of the contract. However in case of downloading tender documents, a non A/C payee Demand Draft `500/- (Rupees five hundred) only payable at SBI , Cuttack in favour of D.D.O, Directorate General of Fire Service, Odisha, Cuttack towards cost of Tender document shall be enclosed. Bids submitted otherwise than in the manner prescribed in the tender document shall be rejected.

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5. Tender calling authority has the right to accept or reject the tender (s) with the assigning any reason there off.
6. Date of issue of Tender document - 13-02-2019.
7. Last date for issue of tender document - 26-02-2019, up to 5.00 p.m.
8. Last date for receipt of tender document - 26-02-2019, up to 5.00 p.m.
9. Date of opening of Tender/ Technical Bids - 27-02-2019 at 11.30 a.m onwards.
10. The bidders are required to depute their representatives to remain present during opening of Tender/ Technical Bid as per dates mentioned above.
11. The tenders received after the stipulated date shall not be taken in to consideration and liable for rejection.
12. The tender calling authority has the right to cancel or alter quantity of any of above item without assigning any reason thereof.
13. Address.
Directorate General of F.S, H.Gs & C.D,
At-3rd Floor of Vigilance Directorate,
Nuapatna,
Cuttack,
Pin-753001

FAX-0671-2300201/ 2303387.



**I .G of Police, Fire Service,
Home Guards & Civil Defence,
Odisha, Cuttack.**

Address - 3rd Floor, Vigilance Building, Nuapatna, Buxibazar, Cuttack-753001
Tel. - 0671-2300317, Fax : 0671-2300201,
E-mail : cghomeguardsodisha@gmail.com, fireservicesodisha@gmail.com

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**DIRECTORATE GENERAL
FIRE SERVICES, HOME GUARDS & CIVIL DEFENCE,
ODISHA**

Letter No. _____/Prov., Dated. -02-2019.

To

M/s

SHORT TENDER CALL NOTICE NO.-11/2018-19.

**FABRICATION OF WATER TANKER AND MINI MOTOR FIRE
ENGINE FOR ODISHA FIRE SERVICE ORGANIZATION DURING
THE FINANCIAL YEAR 2018-19.**

**DIRECTORATE GENERAL
FIRE SERVICES, HOME GUARDS & CIVIL DEFENCE,
ODISHA**

Certified that the book contains page- 1 to 29.

1. Sale of tender document w.e.f - 13-02-2019
2. Last date for sale of tender document - 26-02-2019, 5.00 p.m
3. Last date for receipt of tender document - 26-02-2019, 5.00 p.m
4. Date of opening of sealed Tender/ Technical Bids. - 27-02-2019, 11.30 a.m

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TENDER DOCUMENT NO-(I)

GENERAL CONDITIONS OF THE CONTRACT.

1. The bidder/supplier should have an own fabrication unit for fabrication of Fire Tenders. The latest authenticated documentary proof of this shall be submitted. The proof submitted earlier in some other context shall not be treated as valid and sufficient.
2. All the information as called for in the tender document should be submitted truly, clearly, legibly, transparently, unambiguously and without the use of abbreviations. It shall be submitted in English.
3. All the crucial figures, like, rates and amount should written in figures followed by words in a bracket.
4. There shall be no over writing in the tender document and other papers submitted. All the addition, alterations, deletions and cuttings should be initialed with rubber stamp (or seal) by the same person, who signs the tender document. Failing so, the tender may be rejected.
5. The tenders (also call bids) not submitted in prescribed format or in the prescribed manner, shall be rejected at the risk and responsibility of the bidder.
6. All the rates and amounts shall be quoted in Indian Rupees (IR) and shall be presumed to be in Indian Rupees unless specifically permitted to be quoted otherwise in these tender documents.
7. The rates quoted shall be valid for a period of one year counted from last date of receipt of bids/ tenders.
8. Each page of this tender document should be signed by the bidder with seal in token of having read, understood and accepted the terms and conditions of this contract.
9. For the Companies and Corporation making the bids, the tender document shall be signed by the Managing Director. If it is otherwise, the authority to sign the tender papers on behalf of the Company/Corporation shall be enclosed. In case of partnership Firm, it shall be signed by the active partner. In case of a Proprietary Firm, the tender document shall be signed by the proprietor.
10. "Legal Status" of a bidder shall mean either proprietorship or partnership of private/Public limited Company or otherwise (to be specified) as the case may be.
11. All the documents and papers submitted with the bid should either be in English or in Oriya and shall be authenticated under the seal and signature of the bidder unless specified otherwise in this tender document. If the documents are in any other language, a true translation in English, duly certified by an independent person of repute, shall be submitted.

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12. All the promotional and technical literature of the products intended to be supplied should be submitted for proper appreciation of the bid, whether or not specifically call for in this tender document. This literature should also be in English.
13. Submission of more than one competitive bid by the same firm in response to the tender call notice is prohibited. All such bids, except one, will be cancelled at the discretion of the authority calling the bids. A bidder may, however, offer in his bid more than one product of the same Original Equipment Manufacturer (OEM) if in his opinion, all such products meet the prescribed technical specifications. In that case, he should submit "Technical Bid" of all such products separately but in the same prescribed format, in the same sealed single cover. Separate "Financial Bids" should also be submitted similarly in the same sealed single cover (see below for the meaning of sealed cover).
14. The bidder may use separate piece of paper, where the space provided in the formats in this tender document for submission of information, is not sufficient. The information in the separate sheet of paper shall be prescribed format and each page should be serial numbered and duly authenticated.
15. All the information submitted or supplied in the formats in this tender document shall be presumed to be true to the best of knowledge of the bidder.
16. No firm/Company without valid Value **GST Registration number** and PAN shall be eligible for submitting bids. Firms blacklisted shall also not be eligible for participating in the bid.
17. Copy of Valid Registration Certificate issued by competent Authorities under the **GST Act** and copy of PAN shall be enclosed to the Tender document. In no case other certificates issued by authorities in lieu of such certificates shall be accepted.
18. Copies of income Tax return and Annual VAT and CST returns of previous year along with copies of Audited Balance Sheets, P/L a/c and Trading a/c of previous year where ever applicable need also be enclosed to the Tender document by the Original Equipment Manufacturer / Authorised Agent of OEM.
19. Earnest Money Deposit (EMD) shall either be in the form of Demand Draft/Banker's Cheque of a scheduled Bank payable at Cuttack or by pledging of NSC/FDR/Postal Saving Pass Book all in favour of D.D.O, Directorate General of F.S, H.Gs & C.D, Odisha, Cuttack. EMD shall be returned immediately after the rejection of a Bid. The DD/Banker's Cheque/NSC/FDR/Postal Saving Pass Book etc. shall be returned in original with or without reverse endorsement as required for the refund. EMD of the successful bidders shall be retained till the supplied materials/articles are successfully delivered as ordered. After that it shall be returned in the same manner as in the case of unsuccessful bidders.
20. This tender document has prescribed a two bid format for submitting the offers. It contains the "TECHNICAL" and 'FINANCIAL' bid formats. Both the bids shall be submitted in separate sealed cover identified as 'TEHCNICAL' or 'FINANCIAL'

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bid after detaching their formats from this tender document. Both the sealed covers, the remaining part of this tender document and all the other papers/documents should be put inside a bigger sealed cover and shall be delivered as per conditions published in the tender call notice. All the sealed covers shall have boldly written with the name of the supplier/bidder, the tender call notice number and the last date for submission.

21. The tenders or the bids can be sent by post or courier as well. However, the authorities shall not be responsible for the postal and other delays in receipt of bids.
22. If the last date for submission of the tender/bid turns out to be a holiday, it will automatically be extended to next working day.
23. The tender calling authority shall make arrangements in his office for issuing a written acknowledgement, under proper seal and signature of the filled in tenders, provided those are submitted on or before the due date. The acknowledgement shall be issued even if the tenders are required to be dropped in a sealed box. The acknowledgement receipt shall mention, among others, the tender call notice number.
24. A bid submitted can not be withdrawn. The bidder or his authorized representative (one person only) will be allowed to be present at the time of opening of tenders. They will not participate in the discussions. Clarifications sought, if any, may be provided by them.
25. All or any of the tenders (or bid) submitted can be rejected without assigning any reason thereof. No claim, whatsoever, shall be admissible for; the alleged loss/damage suffered by the bidders on account of such rejections.
26. The sealed Tenders and Technical Bids shall be opened by the Technical Committee in 1st stage. The documents like EMDs, VAT clearance certificate etc shall be verified to ensure that the bidders have been found to have fulfilled all the prescribed criteria and conditions of this tender document other than technical specifications of the products.
27. All the products, failing to fulfill the prescribed technical specifications, will be rejected. Decision of the Technical Committee in this respect shall be final and binding. A bidder can improve the technical specifications of the product offered before the opening of 'Financial Bid'. Decision of the Technical Committee on, whether or not, the revised specification is an improvement, shall be final. Improvement in the technical specifications offered as above, may be accepted or rejected at the discretion of the tender call authority.
28. Notwithstanding an offered product meeting the prescribed technical specifications, it may be rejected, if it has not been tried and tested or used in Orissa Fire Service with satisfaction. It may also be rejected if the bidder fails to successful demonstration before the Technical Committee.
29. 'Financial Bids' shall be opened only in those cases, where one or more of the offered products have fulfilled the prescribed technical specifications. No

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preference or extra payment shall be admissible for the superior technical specifications or quality of the like if any.

30. All the prices quoted shall be FOR Cuttack, Odisha. This means that the prices shall include the cost of delivery at Cuttack.
31. The authorities are not bound to accept the lowest Financial Bid.
32. The order for supply may be placed on the successful bidders but the technical specifications (or quality requirements) for the purpose of supply shall be those, which were offered and accepted by the Technical Committee and not those specified in the tender document.
33. On delivery, the supplies or products shall be inspected to verify the quantity and to see whether those are in accordance with the technical specifications (or quality requirements) for which the order was placed. If it turns out to be otherwise the acceptance of delivery shall be refused at the risk and responsibility of the supplier. Further, the articles found damaged shall not be counted as accepted until repaired or replaced to the satisfaction of the authority.
34. Short deliveries may not be accepted. All the items ordered must be supplied in full for claiming even the part payment.
35. All the transit risks shall be the responsibility of the supplier.
 - a). No way bill, C/D form will be supplied by the indenter to the supplier of outside Odisha for supply of goods. However they may obtain necessary declaration form in required format. A from the concerned Sales Tax Authority on their own.
 - b). The supplier would make suitable arrangement on his own for passing the border, check gates of Odisha.
36. User manuals of the product shall be supplied without being asked for or even if it is not mentioned in the supply order. Moreover, it should be in English.
37. Failure to supply the order in full within the stipulated period or supply of substandard goods may lead to forfeiture of EMD and blacklisting of the suppliers. If at all the delivery is allowed to be accepted after the due date, Liquidated Damages (LD) @ 0.5% of the total amount of order (excluding taxes) per week or part thereof shall be charged from the bidder, however, that the L.D. shall not exceed 5% of the amount of order.
38. The supplier shall submit an undertaking given by him or the OEM committing to supply spare parts for the maintenance of the supplied items for a period at least 18 months from the date of supply.
39. The supplier shall give a performance warranty for a minimum period mentioned in the special condition or one year of the contract. 5% of the amount of the order (excluding taxes) as mentioned in the special conditions of the contract shall be deposited in shape of FDR/ Irrevocable Bank Guarantee duly pledged in favour of Tender Calling Authority and shall be returned after the performance warranty period is over. The said amount may be forfeited partially or fully for failure to

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fulfill the terms and condition of supply and post sales commitment/obligations. The Bank Guarantee should be enforceable and payable at Cuttack.

Conditions of the contract shall be deposited in shape of FDR/ Irrevocable Bank Guarantee duly pledged in favour of Tender Calling Authority and shall be returned after the performance warranty period is over. The said amount may be forfeited partially or fully for failure to fulfill the terms and condition of supply and post sales commitment/obligations. The Bank Guarantee should be enforceable and payable at Cuttack.

40. The bidder must submit in a separate paper mentioning "complied or not complied" against each column of the Tender Specification given in the Tender document.
41. Terms and conditions of this tender document can not be negotiated for variation without obtaining the prior approval of the Govt.
42. All the clarifications sought from the bidders/suppliers on technical specifications of the products or otherwise shall be promptly submitted in a transparent and unambiguous manner.
43. Entire tender document duly filled in shall be treated as part or the contract agreement for supplies in case of the successful bidders.
44. All the disputes shall be subject to jurisdiction of Civil Courts situated at Cuttack.
45. The bidder shall submit all required documents along with tender. Under no circumstances a bidder would be allowed to make any addition/ alteration if any, related to tender or to submit required documents after receipt of the tender by the tender calling authority.

Seal & Signature of the Bidder



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TECHNICAL BID

SL.NO.	NAME OF THE ITEMS.	WHETHER OFFERED PRODUCTS FULFILLS THE DETAILED TECHNICAL SPECIFICATIONS KINDLY ANSWER YES OR NO ONLY.	OFFERED SPECIFICATIONS AND DETAILS OF VARIATIONS IF ANY.
1	2	3	4

Signature & Seal of the Bidder.

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FINANCIAL BID

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NAME OF THE ITEMS..... PER UNIT IN INDIAN RUPEES

1. Price including all the duties & levies :
2. Basic Unit Price :
3. IGST @ - % - :
4. CGST @ - % - :
5. OGST @ - % - :
6. Other Charges (To be specified)
7. Total Unit price of the Item :
8. Total amount payable for supply of entire quantity of the item mentioned in the tender document. :
9. Name of the Original Manufacturers and The brand name or trademark of the item :

Signature & Seal of the Bidder.

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GENERAL BID FORM

(SHORT TENDER CALL NOTICE NO.-11/2018-19)

1. Name, Full Address, Fax No.
Telephone No. & E-Mail of the firm. :
2. Legal status of the firm :
3. Items for which you have submitted
the Bid :
4. For which of the items above you are the
ORIGINAL EQUIPMENT MANUFACTURER
(OEM) :
5. Give the location and Address of your
Factory. :
6. For the items listed at (3) above and
where you have submitted the bid but
you are not the O.E.M. indicate against
each the names of the O.E.M :
7. Kindly confirm by writing 'yes' or 'no' only
that you have been authorized by the
respective O.E.Ms either as dealer or as
sale, supply and servicing agent in respect
of the items you are not the (OEM) :
8. Which of the items, you have submitted
the bids for, will be fully or substantially
imported. Indicate the country to be
imported from. :
9. Have you enclosed the EMD? If yes,
mention the amount and its identifying
details.
10. Have you enclosed all the documents
and papers called for in this tender
document? Kindly enclose a list(use
a separate sheet of paper) :
11. If the answer to (10) above is 'No' which
is the documents/document have not been
enclosed.(Kindly enclose a list of such
documents/papers).Use a separate sheet
of paper if necessary. :
12. Do you have a post sales servicing,
center in Odisha? If yes, give its name,
full address, Fax and Telephone numbers.

Seal & Signature of the Bidder



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SPECIAL CONDITION OF THE CONTRACT.

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TENDER DOCUMENT NO. (II)

1. The Special Conditions given here shall prevail over the General Conditions.
2. The tender document shall accompany with Earnest Money Deposit (EMD) at the rate quoted at Col-5 without which tender shall be rejected. The EMD deposited instrument should be available outside the sealed covers of "Technical" and "Financial" Bid. (EMDs available in the Technical Bid also be accepted)
3. Sealed Bids in this tender document have been invited for the supply of the items listed below. The approximate quantity required has been mentioned against each. The detailed technical specifications of each item are available in the **Annexure-'A'**; to the "Special Conditions" of the contract.

SI No	Name of the equipment/ appliances.	Approximate Quantity	Technical Specification	E.M.D Value
(1)	(2)	(3)	(4)	(5)
1	Fabrication of Water Tanker (15,000 Ltrs Capacity) on chassis model: - Tata LPT 2518/48 Tilt Sleeper Cab Chassis 6x2 BSIV	01 No.	Technical Specification as Annexure-A	₹46,800/-
2	Fabrication of Mini Motor Fire Engine on chassis model: - Ashok Leyland LCV Truck Partner 6 Tyre 3955 mm Wheel Base Cabin Chassis-17 feet.	22 Nos	-- do --	₹5,45,000/-

4. The quantities mentioned above are tentative and subject to change. The rates quoted per Unit shall continue to be valid even if the quantities of items mentioned above are varied.
5. It shall be necessary to bid the items separately. The firm quoted a single item out of the items mentioned above is also accepted.
6. The bidder shall submit along with this tender document a list of names, complete address, Telephone/FAX number of the customers to whom, the item, for which the bid has been submitted, have been supplied and installed in last three year, if any. A clear, unambiguous statement shall be made if an item has not been sold anywhere in India so far.
7. The supplies shall be delivered at Cuttack.
8. Working of the equipment shall also be demonstrated and the expenditure incurred thereof shall be borne by the supplier.

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9. The supplier shall train at their cost our employees.
10. The selected firm shall have to deposit 5% of the cost of stores excluding taxes in shape of FDR/irrevocable Bank Guarantee duly pledged to the Tender Inviting Authority which will be returned back after performance warrantee period is over.
11. All the supplies made shall be subject to have a minimum period of one year warrantee for all items from the date of acceptance.
12. The supplier shall repair or replace at his cost any component of the supplies that may go out of order during the warrantee period. The repair and replacement shall as far as possible be carried within the premises, where the equipment has been kept. If, however, it is necessary to take the equipments to the workshop of the supplier, it must be repaired and reinstalled successfully in its premises within a period of 3 days.
13. Other things being equal, preference shall be given to a bidder, who has opened his sale and service center in Odisha. If an equipment or supply goes out of order within the warranty period and the supplier is informed about it. It must be attended to within 48 hours counted from the time the service call is placed.
14. The Bidders will have to produce the past experience records for manufacturing Motor Fire Engine, Towing Tender. The bidder Workshop also must have sufficient space to keep the vehicle safely.
15. No advance shall be paid. 100% of the payment will be made on delivery of supplies after successful installation and demonstration.
16. The bidder must submit attested copy of the manufacturers Trade certificate issued by concerned Transport Authority for fabrication of Fire Service Motor Vehicles/ Fire Tenders.
17. The bidder must submit attested copy of certificate issued by the concerned Industrial Authority for manufacturing the Fire Service Motor vehicles/ Fire Tenders.
18. The firms located outside the State of Odisha should include their transportation charges with the basic price. The department will not pay any transportation charges for taking delivery of the chassis and for giving delivery of the appliances after fabrication.
19. Entry Taxes, if any should be clearly indicated in the tender i.e. in the Price-Bid. The amount if paid by the party should be supported with documentary evidence, failing which the said amount shall be deposited by way of Treasury Challan.
20. Successful tenders have to collect chassis from Fire Service Training Institute, Baramunda, Bhubaneswar at his own risk on production of Transit Insurance Certificate on the total value of the chassis. During period of fabrication work the fabricators workshop have to be insured against theft, fire and damage on the total value of chassis. The rate quoted should be

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inclusive of insurance claim. No chassis will be delivered without Insurance papers.

21. The selected tenderers will have to enter in to agreement with the tender calling authority. The agreement bond form duly filled in indicating the amount of "Performance Security" at the required rate as mentioned in the General Condition and signed by the tenderers with the attestation and common seal affixed with special adhesive stamp (Non Judicial) not less than worth of Rs.0.75 paise should be submitted within 7 days of receipt of information from Directorate of Fire Service, Odisha, Cuttack.
22. The fabrication work of Mini Motor Fire Engine will be completed within 120 (one hundred twenty) days and Towing Tenders will be completed within 90 (Ninety) working days from the date of receipt of chassis and entering the agreement.
23. The bidder shall utilize the load body (dala) portion of the chassis/ vehicle for fabrication and accordingly quote his Price-Bid.
24. The warranty period for the fabrication work (Mini Motor Fire Engine & Towing Tender) will be 12 months from the date of acceptance.
25. The test i.e. Road Test, Tilting test, Gredebility test, Endurance Test, Deep Lift test shall be carried out as per I SI Specification -950/1980.
26. Detail design/drawing with load distribution chart of the appliance must be accompanied with the tender.
27. Inspection of the fabrication work will be carried out in three different stages.
28. No cutting welding and drilling of chassis shall be done and also manufacturer will ensure that fabrication will not affect technical parameters of the chassis.
29. All equipment specified in technical specification shall be supplied by fabricator as per latest I S standard/ branded items of reputed firms.
30. The workshop shall be of highest order for which strict quality control shall be maintained during the fabrication.
31. The actual gross vehicle weight (i.e. weight of fully staffed loaded and equipped vehicle) shall not exceed the maximum permissible limit of chassis by manufacturer. The distribution of load shall conform to the specifications laid down by the original manufacturer.
32. The manufacturer will have to provide test certificates and bill at the time of stage inspection according to the requirement of Technical Committee.
 - (A). Channel and mechanical test certificate of M.S. channel, square tube, M.S. angle, aluminum sheet and chequered plate, Gun metal, stainless steel, bronze.
 - (B). Bills of all type of raw materials, important bought out items, bought out accessories, Ladders, shall be deposited at the time of delivery.

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33. Please note that, the Technical Committee /Purchase Committee will visit your unit to verify the testing facilities available as per ISI -950/1980 prior to selection of the firms and placing the supply order which is binding.
34. The fabricated vehicle shall meet all the regulation in respect to Motor Vehicle Act/ R.T.O. regulation in force including stickering of reflecting tapes at both sides of the vehicles (front to end) as per requirement of R.T.O for registration of the vehicles.



**I .G of Police, Fire Service,
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Seal & Signature of the Bidder

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ANNEXURE-A

**TECHNICAL SPECIFICATION FOR FABRICATION OF WATER TANKER
(15,000 LTRS CAPACITY) AND MINI MOTOR FIRE ENGINE FOR ODISHA
FIRE SERVICE ORGANIZATION DURING 2018-19.**

I). SPECIFICATION FOR FABRICATION OF WATER TANKER (15,000 LTR CAPACITY)

The technical committee has prepared pre-bid specification for water tanker on bigger chassis with capacity of 15,000 liter for firefighting purpose in urban areas as the Fire Service in urban areas are facing water scarcity for firefighting purpose.

CHASSIS:-Chassis of Model-Tata LPT 2518/48 Tilt Sleeper Cab Chassis 6x2 BSIV in the following specification shall be supplied by the department for fabrication of Water Tanker.

- i). Engine
 - • BS-IV
 - 6 Cylinder of BHP Minimum 170 or above
 - Diesel vibrant
 - Turbo charged inter cool
 - Fuel Tank Capacity minimum 300 Ltrs
- ii). Chassis
 - Heavy duty chassis with built up cabin with minimum wheel base 4800 mm and length of chassis minimum 9200 mm.
- iii). GVW
 - Minimum 25000 Kg.

1. General Requirement:

- 1.1 The appliances shall carry not less than 15000 liters of water, a centrifugal pump capable of deliver the water not less than 3200 LPM at 8.5 kg/cm²
- 1.2 The water tanker including all accessories will be designed, manufactured & tested as per the relevant Indian Standards wherever applicable.
- 1.3 All the equipment & accessories, as detailed in the following clauses, will be fixed on the appliance in a compact & neat manner & will be so placed that each part is easily & readily accessible for operation & maintenance. The centre of gravity of vehicle will be maintained low.

2. Water Tank.

- 2.1 The water tank shall have a capacity not less than 15000 liters when fully filled and made from MS sheet conforming to IS:2062,(SAIL/ TATA/ ESSAR/ JINDAL make) and rectangular in shape with round corners. The

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tank shall be mounted on the chassis behind the crew cabin. The detailed design drawing of the tank with its mounting shall be submitted with tender for scrutiny.

- 2.2 The water tank shall be mounted behind the crew with a gap.
- 2.3 The tank shall be mounted directly on the chassis and as per the design approved by the chassis manufacturer.
- 2.4 The tanks shall be rectangular in shape, with inbuilt framing (reinforced ribs) on both the sides. The sheet thickness shall be as follows

Bottom	:6mm
Sides/Front/Rear/Top	:5mm
Baffles	: 5mm
- 2.5 The tank construction shall be such that there shall be no leakage and shall have overlapped joint of 25.4mm between the bottom sheet and side sheets. The side sheet corner shall be rolled downward up to a minimum of 300mm length and shall be welded to bottom sheets.
- 2.6 All the welding shall be by MIG welded process only. The welding of the tank shall be in such a manner that the first beading is from inside the shell and subsequent bead from outside the shell. The welded surface shall be cleaned of all slags, scale etc. There shall be minimum joints in the tank shell and hence plates used for fabrication of tank shall be of maximum size.
- 2.7 The tank shall be mounted on the chassis with minimum of four saddle supports . The details shall be submitted along with the offer. These supports shall be fabricated from M.S. plate of minimum 10 mm thick with a reinforcement plates of 6 mm thick welded to tank shell outside to the bottom sheet up to with continuous welding.
- 2.8 M.S. plate of suitable size and thickness shall be welded to the tank mounting pedestal for mounting the tank on mounting brackets provided in the chassis frame as per chassis manufacturer's recommendation. The plates/brackets fitted to chassis frame shall also be provided with suitable gusset plates for reinforcement.
- 2.9 The tank shall be fitted on the chassis with the help of U-bolts with nylock nuts.
- 2.10 There shall be two circular manhole of 600 mm dia. mounted on top of the tank.
- 2.11 The water tight manhole cover with good quality of rubber gasket shall be bolted to the collar of manhole. The manhole cover shall be provided with round threaded blank cap with lugs of 10" dia. with rubber gasket.

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- 2.12 The tank shall be provided with suitable arrangement of baffle plates in both longitudinal and transverse direction to prevent the surge of water when the vehicle is in motion and accelerating, braking in speed and cornering.
- 2.13 The baffle shall be arranged in a manner to facilitate the movement of a person throughout the tank for cleaning and welding purposes.
- 2.14 Suitable lifting eyes shall be provided on the shell of water tank to enable it to be lifted from the vehicle for repairs/replacement as and when required.
- 2.15 The tank shall be fitted with 100 mm dia. overflow pipe of 'C' class galvanized taken down below the chassis but without reducing the ground clearance.
- 2.16 The tank shall be fitted with one 63 mm instantaneous hydrant connection with non return valve, closed to pump panel for filling the tank throughout 50 mm above galvanized 'C' class pipe.
- 2.17 A draw pipe of 125 mm dia. of 'C' class galvanized shall be taken from the tank to the pump suction inlet, incorporating 125mm butterfly valve of reputed make.
- 2.18 A drain cock with 50 mm reputed make ball valve shall be provided at the bottom of water tank.
- 2.19 The inside and outside surface of the tank shall be prepared with sand blasting to remove the complete corrosion of M.S. material including baffle plates and immediately two coats of Epoxy primer shall be applied from inside and outside. The tank shall be offered for inspection immediately after sand blasting is completed before epoxy primer is applied.
- 2.20 The inside surface of water tank shall be provided with two coats of anti corrosive black paint i.e. Epoxy paint manufactured by Asian/Dupont paints.
- 2.21 The tank shall be hydraulically tested at a pressure of 0.3kg/cm² for a period of 30 minutes and there shall not be any sign of leakage/sweating/pressure drop during the hydraulic test and the fabricator shall be offered for inspection of hydraulic test of tank.
- 2.22 A cat ladder surface shall be provided and fitted at the rear of water tank and fabricated out of 1" dia. M.S. tabular pipe and 2 mm thick.
- 2.23 The complete top of water tank shall be covered with 14 SWG (2mm) aluminum checkered plate and fixed to the frame fabricated from 40x40x5 mm M.S. angles properly welded to the top structure. The checkered plates shall be bolted to this frame and shall be removable type.
- 2.24 Suction hose brackets of aluminum sheet of 2mm thick with suitable fastening arrangement shall be provided on the top deck to accommodate 4 Nos. 150 mm dia. and 2.5 meters Length suction with male and female couplings.

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3. Cooling System:

Indirect cooling system of open circuit type consisting of a special heat exchanger will be provided to enable full power output during pump operation without any heating of engine & PTO.

4. Pump:

- 4.1 The Centrifugal pump shall be of reputed make preferable of Fire Fly/Rosen Bauer/Kirlosker/Godiva make with 'C E' mark and having the proper capacity.
- 4.2 Centrifugal pump with reciprocating / exhaust / both primer capable of delivering 3200 LPM at 8.5kg/cm² pressure.
- 4.3 The volute body and impeller of the pump shall be of gunmetal construction conforming to LTB-2, IS 318. The gear box of pump shall be of CI and the pump shaft shall be of stainless steel conforming to IS-6603.
- 4.4 Pump shall be of 'C E' mark with reciprocating / exhaust primer.
- 4.5 The pump will be capable of taking suction from:
 - Water tank mounted on chassis. (In normal condition)
 - Open water source through flexible suction hoses up to suction lift 7.0 m.
 - Hydrant systems.
- 4.6 The pump shall have one suction inlet of 150 mm size on rear side and shall be provided with strainer, which shall be easily removable.
- 4.7 The pump will be rear mounted & will be accessible & readily removable for repairs & maintenance. It will be driven by the chassis diesel engine through a standard PTO unit & propeller shaft.
- 4.8 The pump will have self-adjusting, maintenance free mechanical seal, which will be capable of running dry for minimum one minute.
- 4.9 The pump suction inlet will be so sized & oriented to facilitate suction as per 4.3 above.
- 4.10 The pump discharge will be routed to :
 - 4 Nos. outlets (on rear side of vehicle along with control panel) each fitted with screw down valves & ending in 63 mm GM female coupling fitted with end caps.
 - Water monitor fitted on top of vehicle.
- 4.11 The pump will be fitted with exhaust type/ reciprocating or both primer and will be capable of lifting water up to at least 7.0 meters depth (suction lift) at the rate of **30cm/s**. The test certificate and warranty certificate shall be provided by the OEM and the fabricator will also provide the warranty at least for 3 years for maintenance and repairing of the pump in free of cost.

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5. Power Take Off Units:

- 5.1 The PTO unit for water tanker will be of ratio 1:1.48 suitable to meet the performance requirement of the pump.
- 5.2 The drive assembly components (shaft, coupling etc.) will be dynamically balanced & vibration of any parts would be minimum as per standards.
- 5.3 Necessary support for PTO Unit, Propeller Shaft and Couplings & Universal Joints etc. will be provided.
- 5.4 The PTO shall be heavy duty of suitable ratio of transmitting of full torque of the engine in first gear. Means shall be provided to check the oil level in the PTO. A suitable drain plug shall be provided at the bottom. A cooling system made of copper tubes shall be provided inside the PTO at the bottom to prevent the oil of the PTO from the heating. The PTO shall carry a mechanical wire control with hard liver which is fitted in the chassis. Test certificate and warranty certificate (**3 years**) from the OEM shall be supplied at the time of delivery.

6. Body And Stowage:

- 6.1 Enclosed accommodation for four persons shall be provided behind the driver's cabin. The driver seat shall be of adjustable type. All the seats shall have foam cushion and shall be covered with best quality Rexene.
- 6.2 Doors shall be fitted with safety glasses and be of vertically winding type window. The wind screen shall be toughened glass. The glasses on all the windows and doors shall be fixed in aluminum sections & shall be fitted on rubber bidding including wind screen glass to absorb the extra pressure/jerks when the fire tender is moving. Below the crew seat space shall be provided for storage of equipment/mechanical tools etc. The doors shall be hinges type opening outwards, hung forward, catch lock and flush type handles. Also six hangers for fireman's helmets above crewmembers seating arrangements shall be provided.
- 6.3 The cab and the lockers should be of composite construction with sufficient rigidity, reinforcement, and as far as possible 32mmx32mmx2mm thick M.S. square tube of sufficient strength shall be used for the super structure. In the frame of body structure, the vertical and horizontal distance between two such pipes shall not be more than 30 cm. 16 gauge (1.6mm) aluminum sheets shall be used for exterior paneling work all over. For inner lockers-walls 18 gauge aluminum checkered sheet shall be used. 2mm thick aluminum checkered plates shall be used on all lockers and cab floors and top roof. There should not be any joint in the roof top.

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- 6.4 A good quality water proof plywood/ M.S Sheet shall be used in crew sheet and aluminium chequered plate shall be used in the backside of the sheet for extra strengthening of the sheet. Good quality foam and rexin shall be used for backrest which shall be slightly inclined for comfort.
- 6.5 Two rear lockers on both side of the unit shall be provided for secure storage of all accessories and equipments. All equipments shall be stowed very scientifically and systematically in the lockers and each piece of equipments shall have its designated location so that at the time of emergency the required equipments can be very easily located and removed for use. Location of equipments (Labels) shall be provided on lockers for immediate identification. Each equipment shall be properly clamped and strapped in the lockers to prevent shifting of the equipment while the vehicle is in motion. The lockers shall have smooth operations (lockers and the handles used for the fabrication shall as per the sample proved by the department). Lockers door shall be equipped with electromagnetic switch to provide automatic on/off locker lights.
- 6.6 Suitable arrangements shall be provided to carry four lengths of 2.5m suction hoses in convenient location of the top of the vehicle.
- 6.7 The locker of suitable size shall be provided with doors and locking arrangement on both sides. The location and size shall be shown in the drawing. These lockers will be used for keeping delivery hoses accessories. The structure of the locker shall be made from 32x32x2 mm thick M.S. square pipe with 16 SWG aluminum paneling from outside and 18 SWG aluminum checkered plate from inside. The floor paneling of locker shall be 14 SWG (2mm) aluminum checkered plates.
- 6.8 Suitable rear mudguards made from 16 SWG M.S. sheet with reinforcing ribs shall be provided and supported on M.S. brackets.
- 6.9 A suitable towing hook shall be provided at the rear of the vehicle.
- 6.10 Suitable locker provision shall be made at a convenient place preferable in the rear of both sides to carry 10 Nos. Delivery Hoses and accessories.
- 6.11 Riot proof guard of suitable quality shall be provided over the wind shield glass and the window glass of the cabin.

7. Ladder Gallows:

Ladder gallows shall be provided to carry a 10.5 m aluminum extension ladder. The design shall be such that the ladder can be released without difficulty from a reasonably accessibly position and shall embody rollers/bearing to permit easy withdrawal by one man. Means shall also be provided for locking the ladder when stowed.

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8. Water Piping:

- 8.1 All piping shall be sized so as to have min. pressure drop & achieve the required pressure & flow at various locations.
- 8.2 All piping shall be of G.I. of heavy duty. All piping shall be designed for 10% over the max. pressure encountered in the pipe. The piping shall be flanged for easy maintenance.
- 8.3 All lines shall be hydraulically tested at 1.5 times the design pressure however in no case shall the lines shall be hydraulically tested below 18 kg/cm².

9. Water Monitor: Discharge- 2000 LPM @ 10 kg/cm²

- 9.1 Water monitor having discharge capacity of 2000 LPM @ 10 kg/cm² shall be mounted on the top of the appliance in such a manner that it can be manually operated by a crew member. The monitor shall be capable of traversing through 360⁰ in horizontal plane. Elevating from horizontal to 75⁰ and depressing from horizontal to not less than 15⁰ and fully rotation in both directions. The monitor shall be capable of projecting the water discharge to an effective distance of not less than 45 mtr. in still air when operated at design pressure in jet mode. It should have the facility of jet and spray mode.

10. Painting And Marking:

- 10.1 Vehicle shall be painted with 2(two) coats of zinc phosphate epoxy primer and two coats of finished red paints (PU Base).
- 10.2 All the lockers/ cabins will be provided with name plate with letter attached on it boldly indicating the content.
- 10.3 Water line will be painted red.
- 10.4 Entire appliance will be painted in fire red paint confirming to shad 536 of L.S.5-1978 and paint shall confirm to IS:2932. Necessary anti corrosion and priming coat shall be applied before painting in order to achieve gloss finish. One yellow line of suitable size shall be given in the middle of the body.
- 10.5 The inside of the lockers will be painted in grey/pale cream colour.
- 10.6 The chassis frame will be painted black.
- 10.7 Under frame of the chassis will be painted with chlorinated rubber paints.
- 10.8 The appliance will have the following marks at suitable locations.
 - Manufacturer's name and trade mark.
 - Year of manufacture.
 - Engine and chassis number.
 - Pump serial No. and capacity.
 - Capacity of water tank.

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- All instrument control and valves will be identified with properly engraved metallic name plates.

10.9 The fabricator shall give the warranty on painting of the vehicle for 5 years in case of any defects or poor workmanship then same shall be rectified by the fabricator in free of cost.

11. Workman Ship And Finish

11.1 All part of appliance shall be of good workman ship and shall have streamline finish. All mechanical and other part shall be such that parts normally required to be replaced can be supplied and fit correctly.

11.2 Fire Service insignia shall be painted on both sides of the appliance in yellow and lettering "Odisha Fire Service" shall also be painted on either side of the appliance in yellow paint.

11.3 The fabricator shall comply all the provisions of RTA for registration of vehicle.

12. Control Panel:

12.1 An adequate illuminated control panel shall be provided near the pump and easily accessible to operator for operating different controls. The panel or required size shall be made from 3.15 mm aluminum sheet.

12.2 The control panel shall include the following items.

a) Throttltle Control for engine.

b) Pressure gauge : Low pressure : 0 to 17 kg/cm²
(Glycerin filled)

Compound gauge : Vacuum : 0 to 760 mm of hg in Red.
(Glycerin filled) : Pressure : 0 to 10 kg/cm² in Black.

12.3 The pressure gauge and compound gauge shall be of reputed make Glycerin filled with min 4" dia. Panel mounted.

12.4 Clear acrylic glass tube, unbreakable type water level indicator calibrated on full, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$ and empty.

12.5 A light shall be provided in the control panel for night operation.

13. ACCEPTANCE TEST/INSPECTION:

The pump fitted on the vehicle shall be subjected to various tests as detailed below.

13.1 The pump with its entire fitment shall be subjected to hydrostatic testing on pressure of 21 kg/cm².

13.2 The pump shall be run dry for a period of minimum 2 minutes at 2000RPM to check the integrity of mechanical carbon seal. After this test there shall not be any leakage of water through carbon seal.

13.3 The pump performance test shall be carried out by running the pump at constant RPM **2600** and measuring the discharge at various pressures.

13.4 The pump shall be subject to endurance test for a period of four hours continuous running.

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- 13.5 During the endurance test the water shall not be replenished in the cooling system and the temperature of the cooling water and engine oil should not exceed the manufacturer's recommended standard for the continuous operation and engine should not show sign of stresses.
- 13.6 The pump with its fitment shall be tested hydrostatically to 1.5 times the working pressure at the pump i.e. for low pressure side it shall be tested to 21 kg/cm².
- 13.7 The required fuel and lubricant for testing will be borne by the fabricator.

14. Accessories:

Tools- All tools required for normal routine maintenance-1 set of fire tender which are not including in the kit for the chassis and additional following tools to be supplied.

The vehicle shall be equipped with following accessories to be supplied by the fabricator

- 14.1 Aluminum double grab rails shall be provided on the top of the unit.
- 14.2 Four numbers rubber made suction hose of 5" dia., 8' long or 2.5 meters each fitted with good quality gun metal coupling confirming to I S 901.
- 14.3 One piece metal strainer of 5" dia. Gun metal.
- 14.4 Basket strainer-one piece for 5" dia. metal strainer made of cane with canvas with tying facility as per I S 3582/66.
- 14.5 Suction Key- 2 Nos.
- 14.6 Two set of 12/24 volts halogen fog and spot lamps.
- 14.7 Two numbers of reverse lights- automatic with the gear box.
- 14.8 One number search light with halogen bulb of 24 volt with 30mtr flexible wire in a reel shall be provided on the top of the unit and it should not be create hindrance for operation of water monitor.
- 14.9 Single plate mudguard shall be provided on all wheels.
- 14.10 Space for automobile battery to be provided for housing 21 plate batteries, the lower level at the exterior of the cap.
- 14.11 Platform shall be provided at the rear of the tender.
- 14.12 Fire Bells- 250mm diameter Fire bell will be mounted externally and will be capable of being operated from the driving compartment. The bell will be of hand operated type.
- 14.13 Fog lamps-Two
- 14.14 Amber blinker lights- situated on the head of the driving compartment with audio warning system for two kilometer (Grand type).
- 14.15 A-24 volts DC operated "Grand" make blinker light bar (30" length) with P.A. system and hooter with multiple tones should be provided on the top of the vehicle with firm support and assembly shall be covered with S.S. grill. Assembly shall be operated from cabin and it shall be audible to minimum one kilometer distance.

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II). SPECIFICATION FOR FABRICATION OF MINI MOTOR FIRE ENGINE.

1.0. GENERAL.

Fabrication of Mini Motor Fire Engine shall be made on: - Ashok Leyland LCV Truck Partner 6 Tyre 3955 mm Wheel Base Cabin Chassis-17 feet.

2.0. STRUCTURE.

The structure will be fabricated having 5 mm thickness channel of 75×40 mm size providing suitable padding in between chassis & cross bearer and shall be tightened with 'U' bolt having nyloc lock nut and washer. The body structure shall be made out of 14 gauge thick up to 32 mm square pipe. In the frame of body structure, the vertical and horizontal distance between two such pipes shall not be more than 30 cm. Four leg made out of MS Plate of suitable size should be provide to hold the weight of the filled tank. Other MS angle and flat if necessary should not be less than 3 mm thickness and the complete structure should be painted with epoxy paint.

3.0 WATER TANK.

The water Tank should have capacity of maximum 3000 liters capacity and would be fabricated from 3.15 to 4 mm gauge thickness good quality Stainless Steel Sheet or 5 MM or above gage thickness FRP sheets including baffle plates. The water tank should be semi-elliptical and to avoid corrosion the inside of the tank should be adequately painted with plastic paint, preferably by epoxy coating coat. Full breadth of the tank should be welded to the oracle and mounted with suitable plates on the chassis. The inside of the tank should be suitably baffled (at least 4 nos) with 3 mm SS Plate to prevent surge while the vehicle is accelerating, retarding and also cornering during apply of brake. The design of the baffles will provide access to all compartments so as to allow full contents to flow to the pump and for repair and maintenance. Adequate care should be taken for mounting of the water tank so that there will be proper load distribution on the axles. For proper distribution of the load of water additional spring leaves (two Nos. auxiliary spring leaves) on each side of the rear and additional spring leaves (One No. auxiliary spring leaves) on each side of the front Axles should also be provided.

The tank should be fitted with a filling orifice and bolted manhole of 560 mm dia on the top of the tank for cleaning. There should be suitable eyes fitted on the sheet of the tank to enable the tank to be lifted off the vehicle for repair/maintenance etc as and when required. Anti corrosive treatment shall be given to all sheet used in the tank. The overflow pipe will be taken down to a point well below the chassis without reducing ground clearance and would be behind the rear axle. There should be provision for fitting of one male coupling at the top of the tank for loading of water.

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The top of the tank and rear portion of the vehicle would be covered completely with aluminum chequered plate of 18 gauge with beading all around the tank over. The base plates of the lockers should be of 16 gauge aluminum chequered plate with adequate reinforcement under the lockers. The external body should be of 18 gauge aluminum sheet. Superior quality door and window locks and heavy duty chromium plated stainless steel handle should be fitted for easy opening of doors and lockers. There should be six lockers suitably placed in the body, three on each side with compartment. Proper locker arrangement as mentioned below shall be provided for storage and easy handling of equipment at the time of operation. Each piece of equipment shall have its designed location so that at the time of Emergency the required equipment can be very easily located and removed for use. Location of equipment (Labels) shall be provided in lockers for immediate identification. Each equipment would be properly clamped and strapped in the lockers to prevent shifting of the equipment while the vehicle is in motion. The lockers shall have smooth operation. The size of the lockers for placement of equipments are as follows:-

	Size of Draws/ Lockers	Provision for placement of Equipment	Provision for placement of Equipment
Left (Officer's side)	L-I Size- 48"(H) x 28"(L) x 18"(W)	Delivery Hose 5 Nos (30 Mtrs Length)	Fireman helmet 6 Nos. Gum Boot 6 pairs, Rescue line 2 length.
	L-II Size- 29"(H) x 48"(L) x 20"(W)	i). Delivery Hose-5 nos (30 mtrs each) ii). Portable Fire Extinguisher-2 Nos.	Metal Strainer -1 No Basket Strainer-1 No FB2 Branch pipe with pick up tube Aluminum Short Branch Pipe
Right (Driver's side)	L-I Size-54"(H)x28"(L)x20"(W)	Equipment like Crow Bar and Pick Axe etc.	Hose Ramp-2 prs
	L-II Size- 48"(H) x 28"(L) x 20"(W)	Fireman Axe-2Nos Concrete Cutter-1 No Spade-2 Nos	Combi Tools- 1 No Mechanical Saw-1 No
	L-III Size- 29"(H) x 48"(L) x 20"(W)	Portable Fire Extinguisher- 2 Nos & Foam Compound-60 Lts	Fire Resistance Suit.
Top Floor	Aluminum Extension Ladder at left side of the appliance. Stretcher Fire Hook (in the left side of the roof top of the vehicle).	----	----

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The door locks shall be good quality, outer handle subject to approval by the department. Hose tunnels should be provided at the top to carry 4 nos Suction Hose (8 feet long each). One small ladder shall be fitted at the rear, made out of iron in inclined position to mount to the tank top by crew members and provision of water indicator also be provided at the rear side.

5.0. CABIN :

Just behind the driver's cabin seating accommodation shall be provided for Crew Members (at least 4 members). The seat shall be made of superior quality foam cushion covered with good quality and durable foam nylon textile fabrics subject to approval by the department. The back side of the Crew seats shall be curved type provided with 2" foam cushion. The lower side of the crew seats should be provided with iron sheet of 16 gauge thickness instead of wooden planks. Heat resistant material i.e. thermo cool should be provided conveniently in the ceiling to protect heat. Two hinged doors shall be provided on each side on this cabin for the crew members. The doors should be hinged opening outwards and would be hanged forward and will have catch locks flush type handles. The cabin would be paneled externally with 16 gauge aluminum sheets and internally with aluminum chequered plates. The two doors will be fitted with toughened glasses and winding type regulators. Grab rails and non-slippery steps would be provided. Rear view mirrors would be provided on the outside of the cabin on both sides. One Fire Bell of 250 mm dia Gun Metal (As per Indian Standard) would be provided on the top of the cabin in an appropriate place and arrangement so made for smooth running of the bell from inside the cabin. Riot proof guard of wired mess shall be provided against the front wind shield glass, cabin doors and head and back lights and with clearance for stretching out one's hand through each side door guards. The window glasses should be retractable type. The seat shall be properly cushioned and upholstered with good quality nylon textile fabrics. Flooring shall be made of 2 mm thick aluminum panels.

	Size of Draw	Provision for placement of Equipment	Provision for placement of Equipment
Inside the Crew Seat	Size-68" (L) x 18" (W) x 14" (H)	L-I Provision for battery Size-34"(L) x 17"(H) x 17"(W)	R-I Provision for B.A Set with spare cylinder Size-34"(L) x 17"(H) x 17"(W)-

Besides, a first aid box also be provided inside the cabin just behind the officer's seat.

6.0. P.T.O.

1.0. A Full torque, drive line heavy duty P.T.O will be provided for fitting to the appliance.

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- 2.0. A lever for engaging the PTO shall be provided in the driver's cabin with proper locking arrangement.
- 3.0. The PTO shall be mounted on heavy duty cross members and support brackets between the longitudinal members of the chassis frame.
- 4.0. Provision of drain plug shall be made at the bottom of the PTO.

7.0. PUMP.

- 1.0. The Centrifugal pump shall be of reputed make preferable of Fire Fly/Rosen Bauer/Kirlosker/Godiva make with 'CE" mark and having the proper capacity.
- 2.0. The Pump unit having 250-300 GPM (1125 to 1350 LPM) at 7 Kg/Cm² for fitting at the rear of the appliance.
- 3.0. It shall be coupled with main engine with pump control panels at the rear, connected to PTO by propeller shaft and universal slip joints with sufficient number of bearing supports.

8.0. COOLING SYSTEM :

An appropriate closed circuit indirect cooling system shall be given to cool the engine.

9.0. HOSE REEL.

One first aid Hose Reel of 60 mts length and 20 mm dia with good quality single pipe shall be provided and mounted at the rear of the appliance. It shall be fitted with a shut off nozzle having out let of 10 mm. The reel shall be provided with suitable arrangement to prevent over run of tubing without affecting its easy run. The flow shall be controlled by a gate valve and the plumbing between the hose reel and pump shall be clear and unobstructed water way of not less than 50 mm through out.

10.0. LADDER GALLOW:

Ladder Gallow at the top of the water Tank of the appliance (in the left side) shall be provided to carry 10.5 mtrs aluminum extension ladder. The design shall be such that the ladder can be released without difficulty from a reasonably accessible position and shall embody rollers to permit easy withdrawal by one man. Means shall also be provided for locking of the ladder when stowed.

11.0. PAINTING:

The vehicle shall be painted with Red colour. The paint would confirm to IS-2932-1974 suitably painted internally and externally with one coat of zinc-Chromate and under coat two finishing coats. The finishing external coat would be P.O. Red "ODISHA FIRE SERVICE" (Ph. No.-101) and "ଓଡ଼ିଶା ଫାୟର ସେଭା" to be lettered in golden yellow on both sides of the vehicle and 'FIRE' painted in front at the top of the wind shield glass in red colour over yellow colour. The name of the

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Fire Service/ Organization shall be painted on both side of vehicle in letter of suitable size in golden yellow radium stickering.

12.0. WORKMANSHIP.

All part of the appliance shall be good workmanship and shall have streamline finish. All mechanical and other part shall be such that parts normally required to be replaced can be supplied and fit correctly.

13.0. MANUFACTURE GUARANTEE CERTIFICATE.

The manufacture shall furnish a guarantee for the material, workmanship and performance of the appliance for period of 1 year from the date of receipt/ testing. The manufacture shall be responsible for replacing any part which may become unserviceable during the above period due to substandard/ bad workmanship free of all charges.

14.0. CONTROL PANEL.

The following control shall be provided at the rear operating panel.

- A. Pressure Gauge - 0 to 10 Kgf/Cm²
- B. Compound Gauge - i). Pressure 0 to 7Kgf/Cm² (I n black)
ii). Vacuum 0 to 75 cm fig (I n red)
- C. Engine Throttle Control.

15.0. ACCESSORIES:

The following Accessories will be supplied by the fabricator.

1. Suction Hose of 4" dia 8' long fitted with good - 4 Nos.
quality Gun Metal coupling conforming to I S:902.
2. Metal Strainer of 4" dia Gun Metal - 1 No.
3. Basket Strainer for 4" dia Metal Strainer made of - 1 No.
Cane with canvas having tying Facility with I S -
3582/66
4. Suction Key - 2 Nos.
5. Grand type emergency light bar (Red & Blue revolving - 1 No.
light) with public address system amplifier and siren
capable of 1 Km audible range. It should be covered
with stainless steel frame.
6. Alarm Bell pendulum (Gun Metal) 250 mm dia-10 kg - 1 No.
weight.
7. Rear light for pump - 1 No.
8. Search light with tripod stand fitted with 30 meters - 1 No.
wire mounted on a reel adjustable type.
9. Fog Lamp - 2 Nos.
10. Spot light at the top - 1 No.
11. Cabin and locker light - 1 each
12. One Aluminum Extension Ladder of Simplex/ Kings - 1 Set

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Ladder or similar good quality of noted manufactures shall be provided with the appliances. The ladder shall be 10.5 mtrs with non skid rubber boots at both ends and conforming to IS-4571. The ladder should be strong enough to hold 3 (three) persons without abnormal bend.

13. Riot proof guard shall be provided at officer's and Driver's window to protect glass of the driver's and officer's window.
14. One male instantaneous coupling to be fitted at the Top of the tank (rear side) for loading of water by Delivery Hose.

16.0. TOOLS (TAPARIA or JALANI)

- | | |
|------------------------------------------------|-------------------|
| 1. D.E. Spanner | - 1Set (12 Nos). |
| 2. Hammer (2 Lbs) | - 1 No |
| 3. Screw Driver (Big) | - 1 No. |
| 4. Screw Driver (Small) | - 1 No. |
| 5. Insulated Cutting Pliers | - 1 No. |
| 6. Inspection Lamp (Reputed make) | - 1 No. |
| 7. Grease Gun (Heavy duty) | - 1 No. |
| 8. Slide wrench 12" | - 1 No. |
| 9. Nose plier | - 1 No. |
| 10. Chisel | - 1 No. |
| 11. Monkey Plier | - 1 No. |
| 12. Ring Spanner | - 1 Set (12 Nos.) |
| 13. Metallic Tool Box for keeping above tools. | - 1 No. |

17.0. ACCEPTANCE TEST :

The Pump fitted on the vehicle shall be subjected to various tests as detailed below.

- i) The Pump with all its fitment shall be subjected to Hydrostatic testing on pressure of 21 Kgs/Cm².
- ii) The Pump shall be run dry for a period of minimum two minutes at 2000 RPM to check the integrity of mechanical carbon seal. After this test there shall not be any leakage of water through carbon seal.
- iii) The Pump performance test shall be carried out by running the Pump at constant RPM at 2600 and measuring the discharge at various pressures.
- iv) The Pump shall be subjected to Endurance test for a period of **four** hours continuous running. Rated output 1125-1350 LPM at 7 Kg/Cm².
- v) The reciprocating primer shall be capable for lifting of water from 7 mtr depth within 30 second.
- vi) During the endurance test the water shall not be replenished in the cooling system and the temperature of the cooling water and engine oil should not

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exceed the manufacturers recommended standards for the continuous operation and engine should not show sign of stresses.

- vii) Grad ability test, Rain test, Tilting test of the vehicle and Hydraulic test of the tank shall be done as per IS-950/1980 (Second revision).
- viii) The required fuel and lubricant for testing will be borne by the fabricator.
- ix) Trial Test of vehicles, be run on road for around 40 Kms and POL to be borne by the fabricator.

18.0. FITTING OF PUMP & PTO.

It is the risk and responsibility of the fabricator for fitting of Pump and PTO to the appliance for successful testing/ acceptance of the Mini Motor Fire Engine.

Design & drawing of the appliance is enclosed.

FIRE FIGHTING EQUIPMENT.

- 1. Delivery Hose. - 6 Nos.
- 2. Portable Extinguisher. - 6 Nos.
(D.C.P, CO² & ABC)
- 3. Aluminum Short Branch Pipe. - 2 Nos.
- 4. Hand Control Branch Pipe. - 1 No
- 5. FB2 Branch pipe. - 1 No
- 6. Foam Compound. - 60 Lts
- 7. Metal Strainer. - 1 No
- 8. Basket Strainer. - 1 No
- 9. Fire Resistance Suit. - 2 Sets

(All equipments except SI-7 & 8 will be provided by the Department)

DISASTER EQUIPMENT.

- 1. Lifebuoy - 2 Nos.
- 2. Life Jacket - 2 Nos.
- 3. Rescue Rope - 2 Nos.
- 4. B.A Set with spare cylinder - 1 No
- 5. Combtools - 1 No
- 6. Mechanical Saw - 1 No
- 7. Extension Ladder (at the top) - 1 No
- 8. Stretcher for adult - 1 No
- 9. First Aid Box - 1 Set
- 10. Concrete Cutter - 1 No

(All equipments will be provided by the Department)

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