DELHI AVIATION FUEL FACILITY PRIVATE LIMITED
AVIATION FUELLING STATION
SHAHBHAD MOHAMMADPUR
IGI AIRPORT
NEW DELHI-110061

TENDER NO: DAFFPL/FF/2022-23/05

INVITING TENDER FOR ENGINEERING PROCUREMENT CONSTRUCTION (EPC) OF NEW 9000KL AG TANK

BID DUE DATE & TIME: 1500 Hrs. IST on 23rd June 2022

OPENING OF TECHNICAL BIDS: 1100 Hrs. IST on 24th June 2022

Contents

NOTE: BIDDERS ARE REQUESTED TO SIGN AND STAMP ALL THE PAGES OF THE TENDER DOCUMENT AND SEND THE SAME BACK IN THEIR OFFER AS A TOKEN OF UNCONDITIONAL ACCEPTANCE OF TENDER TERMS.THE DEVIATIONS, IF ANY, SHOULD BE MENTIONED SEPARATELY ON BIDDER"S LETTER HEAD IN TECHNICAL BID. THE DEVIATIONS MENTIONED ANYWHERE ELSE SHALL NOT BE CONSIDERED. IN ABSENCE OF DEVIATION SHEET, IT WOULD BE CONCLUDED THAT BIDDER HAS ACCEPTED THE TENDER TERMS WITHOUT ANY DEVIATIONS. CORRECTIONS IN TENDER DOCUMENT WILL NOT BE ACCEPTED.

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DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

TENDER NOTICE
DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

INVITING TENDER FOR CONSTRUCTION OF NEW 9000KL ABOVE GROUND TANK AT DAFFPL

TENDER NO: DAFFPL/FF/2022-23/05

Delhi Aviation Fuel Facility (P) Ltd (DAFFPL) invites bids from eligible bidders for EPC CONSTRUCTION OF NEW 9000KL ABOVE GROUND TANK AT DAFFPL FUEL FARM.

Brief Scope of work:
We intend to construct a new ATF above ground tank along with dyke including all mechanical, civil and other allied works complete as per specifications.

Bid Security (EMD):	As mentioned in the Tender document
Date, Time & Venue for Voluntary Pre-bid Meeting:	7th June 2022; 1500 HRS (IST) at DAFFPL, Aviation Fueling Station, Shahabad Mohammadpur, New Delhi-110061
Last Date of Submission of Queries	Upto 18:00 HRS (IST) on 9th June 2022.
Bid Due Date, Time & Place of Submission:	Upto 15:00 HRS (IST) on 23rd June 2022, at e-Tendering Portal of DAFFPL.

Detailed Invitation for Bids (IFB) along with Pre-qualification Criteria, Bid Document Corrigenda can be viewed and downloaded from DAFFPL's website: **http://daffpl.enivida.com**

Chief Executive Officer
DAFFPL, New Delhi

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CHAPTER 1: INTRODUCTION (COVERING NOTE)

Delhi Aviation Fuel Facility Private Limited (DAFFPL) is a Joint Venture comprising Indian Oil Corporation Ltd. (IOCL), Bharat Petroleum Corporation Ltd. (BPCL), and Delhi International Airport (P.) Ltd. (DIAL). We provide the infrastructure aimed at ensuring an uninterrupted flow of Aviation Turbine Fuel (ATF) to all type of aircrafts at the Indira Gandhi International Airport, New Delhi (IGI Airport) as per international benchmarking.

The bidder/ contractor shall refer to various sections of this tender document for detailed scope of work. It is contractor's/ bidder's responsibility to execute the job in all respects as per specification furnished by consultant / owner and as per applicable codes, standards & in line with statutory requirements.

The field circumstances shall also be taken into consideration and methods suitable to the site conditions shall be adopted with concurrence of the Engineer-in-charge and in line with manuals, instructions of respective equipment and specified codes and standards. The successful accomplishment of the project is greatly influenced by the teamwork, workmanship of the workers and supervisors.

The Contractor/Bidder shall employ only such workers and supervisors who have considerable experience of similar work and who can work, temperamentally in good harmony and co-operation.

Delhi Aviation Fuel Facility Private Limited (DAFFPL) invites tenders in prescribed tender form under two-bid system. For viewing details including EMD, BID QUALIFICATION CRITERIA etc. please visit our e-Tendering web site **http://daffpl.enivida.com**

The bids are to be submitted on the e-Tendering portal of **Delhi Aviation Fuel Facility Private Limited (DAFFPL).**

1. The Tender is floated in Two Bid system consisting of Technical Bids (Bid Qualification Criteria - BQC, Technical plus Commercial) and Price Bids.

   Part-I : Bid Security / EMD in accordance with tender document.
   : BQC (Bid qualification criteria), Technical & commercial Bid, duly filled in & along with all supporting as requested to be submitted/uploaded on DAFFPL e-tendering portal.
   Part –II : Price Bid.

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2. The bidder should be able to construct the entire size/type/quantity bidded by them. Bidders cannot bid for part items or part quantity.

3. Firstly, the technical bid (BQC & Techno commercial bids) shall be opened. The Bids shall be initially scrutinized by a team as per tender requirements of BQC (Bid qualification criteria). Technical cum commercial bids of only those vendors who qualify the BQC will be processed further. The price bids of only techno-commercially qualified bidders will be opened, evaluated and shortlisted for Placement of Work Order.

4. The bids submitted should be valid for **four months** from the due date of bid submission for Owner's acceptance. Once accepted it will remain firm till completion of contracts/orders.

5. The tender document forms the minimum requirement for the bidder to comply with, information/requirements mentioned in any document as a part of this tender have to be complied with irrespective if the same information is available in all documents or not. This tender is a EPC, lump sum contract wherein all requirements have been mentioned either in form of tender document or indicative BOQs for the bidder to quote upon. No extra amount will be paid in lieu of completion of any requirement mentioned in any format in this tender document.

6. The requirements mentioned in drawings/BOQs/tender document are indicative and form as basic minimum requirements. The successful contractor cannot propose any system/specification/detail lower than the indicative drawings/BOQ/tender.

7. We request the bidder to carefully go through all tender documents before submitting the offer. Please note that any exceptions or deviations to the tender document are necessarily to be recorded in the attached deviation statement only. Any exceptions/deviations brought out elsewhere in the bid shall not be considered.

8. The bidders may be invited for a presentation to DAFFPL during Techno-commercial evaluation before price bid opening.

9. The bidders to provide their bank details/ PAN / Goods & Service Tax Registration No. / VAT registration No., as applicable for updating vendor master file. You are also requested to keep us informed of any change in address / status of your business / contact details including email address etc.

10. Party can quote with the deviations as referred in Point No.5 above. Please refer query end date / time in tender calendar after which no query posted by bidder shall be considered. However, DAFFPL reserves

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the right to respond the queries after cutoff date / time mentioned in tender calendar.

11. Please note that queries related to scope of job, tender specifications, terms & conditions etc., should be submitted on e-tender portal before the query closing date. Any modification in the bid document that may become necessary as a result of the Pre-Bid meeting shall be made by the owner exclusively through the issues of corrigendum/ addendum posted at e-tender portal.

12. UNSOLICITED POST BID MODIFICATION
Bidders are advised to quote strictly as per terms and conditions of the Bidding Document. After tender submission due date & time/ extended due date & time (as the case may be) the bidders shall not make any subsequent price changes, whether resulting or arising out of any technical / commercial clarifications sought/allowed on any deviations or exceptions mentioned in the bid.

13. EMD & Techno Commercial bid shall be opened on or after the date mentioned on tender opening date on e-tender portal**.** Price Bid of only those bidders whose offer is found meeting both BQC & techno-commercially acceptable, shall be opened on a later date as decided by DAFFPL.

14. DAFFPL reserves the right to accept any one or more tender in whole or in part or reject any or all tenders without assigning any reason. DAFFPL reserves right to accept any or more tenders in part. Decision of DAFFPL in this regard shall be final and binding on the bidder.

QUERIES AND CLARIFICATIONS: Any query or clarification with regard to this tender may please be referred to below address & phone nos. on any working day during office working hours.

Mr. Ajay Singh, Asst. Manager Projects, ajay.singh@daffpl.in, 9999946309,	Mr. Manish Kumar Project Officer manish.kumar@daffpl.in, 9810640818	vishvajit@daffpl.in

15. GOVERNING LAWS: The laws of Union of India shall govern all matters concerning the tender. Any issue arising related to the tender, or the selection process shall be adjudged by the courts in Delhi alone.

16. A Pre-bid meeting shall be conducted is scheduled for **7th June 2022 at 1500 Hrs IST** at the office of DAFFPL, New Delhi. All prospective bidders can participate in the same. Any clarification regarding tender shall be sorted out during the pre-bid meeting.
    a. The purpose of the pre-bid meeting is to clarify any doubts of the BIDDER on the interpretation of the provisions of tender.
    b. Bidder(s) are requested to submit their queries, mentioning form

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name, clause no. & clause as per schedule in order to have fruitful discussions during the meeting.

c. All the Bidder(s) are requested to attend the pre-bid meeting to be held at DAFFPL Office as per schedule.

17. **Earnest Money Deposit (EMD) (also referred to as Bid Security):** Bidder shall be required to submit the Earnest Money Deposit (EMD), either in the form of Bank guarantee as per format (provided as Annexure) or bank transfer (IMPS/RTGS) in favor of Delhi Aviation Fuel Facility Private Limited. The EMD in either form has to be submitted on or before the due date & due time of bid submission of this tender with a covering note mentioning the tender no.

Direct bank transfer for Tender Fee and Earnest Money Deposit to DAFFPL account as detailed below. The UTR Reference and date shall be provided in the Tender portal for DAFFPL verification.

Name of Account	**DELHI AVIATION FUEL FACILITY PRIVATE LTD.**
Account No.	39040531887
Name of Branch	Corporate Accounts Group-II Branch, New Delhi
IFSC Code	SBIN0017313
SWIFT	SBININBB824
MICR	110002562
PAN	AAACS8577K
TAN	DELS55939C
BSR	0017313

a. The bidders not submitting EMD by due time & date shall be rejected & their bids shall not be evaluated further.

b. **The EMD amount shall be 2.50 Lakhs (Two Lakhs Fifty Thousand) INR.**

c. Firms registered with National Small-Scale Industries (NSIC)/MSME of India are exempted from submission of EMD/bid security. Central Public Sector Enterprises of India and Firms registered with Nation Small Scale Industries Corporation (NSIC) of India are exempted from submission of EMD/Bid Security. Central Public Sector Enterprises are requested to give a self-declaration on their letter head to this effect. Bidders registered with NSIC of India are also requested to submit self-declaration on their letter head to this effect along with a copy of their Valid Registration certificate.

18. **Site Restriction:** The job must be done in an area which is inside the premises of DAFFPL Fuel Facility. Successful bidder will have to follow all the security norms and procedures for entry and exit to the facility. The job

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timings will have to change as per the permissions obtained from Operation Dept. All the entry procedures for labours / machinery / raw materials as per the rules of the DAFFPL will have to be followed by the vendor. Contractor shall visit the site and ensure familiarity with the working condition / limitations at the site. Also, the entire works are to be carried out in an operating Location. The contractor may have to follow the timings of the facility and must work under restricted conditions. The normal working hours of facility is 0930 Hrs to 1800 Hrs on Monday to Saturday except holidays. Working beyond above normal working hours /holidays /Sundays are to be with prior permission of Engineer in charge and relevant facility officers. Contractor is required to plan his work within the normal working hours and days and accordingly he has to mobilize the resources to complete the job within the scheduled time. However, all efforts will be made by DAFFPL to give extended working time beyond normal working time in order to help the contractor for early completion of the job. No additional payment / charges shall be payable for such works. Not getting permission for working on holidays/ Sundays or beyond normal working hours will not be considered as reason for delay in work. The contractor and his personnel have to obey all rules and regulations of the plant. Trained and experienced supervisor/ engineer are required to be present at the work spot always.

Also, work may get delayed due to operational requirement. Any extra claims on account of the same will not be entertained. Fire Screen as mentioned in specifications & BOQ will have to be installed to completely seal the area under work.

The tenderer must visit the site of the tender and familiarize himself with location, operating / working conditions as well as any other local factors which could influence the working before quoting for the job. His quote should take care of any such restrictions; conditions etc. and any claim afterwards will not be entertained. **It is suggested that the Tenderer must visit the site in order to have a better idea of site conditions and factors.** It is strongly urged that the contractor visits DAFFPL terminal and examines the condition of site.

19. **Completion Period:** Time is the essence of the contract. The time period of contract is **8 (Eight) months** from the date of Letter of Intent/notification of award. The time includes necessary time required for mobilizations and demobilizations after the execution of work. Successful bidder is required to provide a bar chart /schedule showing the activities/events with time within 10 days from date of award of work. Also, the jobs may get delayed

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due to monsoon. Any extra claims on account of the same will not be entertained.

20. The contractual completion period of **8 Months** is inclusive of all the lead time for procurement of raw materials, inspection / testing, packing or any other activity whatsoever required to be accomplished to complete the work in all respect.

21. The work is required to be done in a working/operating location, the party has to get necessary Hot/cold work permits from the concerned officer in plant as per OISD standards and all workmen should be provided with necessary safety helmet, safety belts, safety shoes and other standard safety equipment's. Any delay on account of non-adherence to safety norms, rules and regulations of plant as well as obtaining work permits from the plant shall not be accounted for the delay in completion of job.

22. **Receipt & storage of material at Site**: Contractor is required to make his own arrangement for unloading and storage of materials at site. Contractor is required to inform us prior to dispatch of materials and his representative required to be available for receipt and unloading of materials at site.

23. The successful vendor has to arrange and submit to fuel facility the proper **POLICE VERIFICATION DOCUMENTS** if required of all the labors, site in charges, supervisors, welders, grinders and all associated workmen who will be coming inside the terminal for carrying out related jobs.

24. For carrying out the jobs inside the depot the vendor must arrange for associated tools, tackles, manpower, machinery of his own and no extra payment will be made to vendor on account of the same.

25. For arranging the electricity vendor to note that only Acoustic Proof, box type DG sets will be allowed inside the depot premises. Vendor to also note that proper GI plate type earthing system as per IS 3042 (LATEST) has to be provided by the vendor for DG set and no extra payment will be done for the same. There should be two nos. earthing system connected in a grid at a location as instructed by DAFFPL site in-charge.

26. All the debris, scrap, cut pieces, excavated earth (Sand/soil) etc. coming out of fabricated plates, excavated earth, area cleaning will have to be shifted by the vendor to a location inside or outside the terminal premises or disposed off to a government approved site & as per government guidelines on the instruction of DAFFPL site in-charge and no extra payment will be done for the same.

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THE FORMS /ATTACHMENTS TO THIS TENDER ARE AS UNDER:

1. Chapter 1: Covering Note
2. Chapter 2: Instructions to Bidders
3. Chapter 3: Bid-Qualification Criteria
4. Chapter 4: Performance of Work
5. Chapter 5: General Purchase Conditions
6. Annexures attached are as follows:
   - Annexure A – Scope of Work
   - Annexure B – Technical Specification
   - Annexure C – Drawings
   - Annexure D – Indicative Bill of Quantity
   - Annexure E – Schedule of Prices
   - Annexure I – DEVIATION SHEET
   - Annexure II – DECLARATION SHEET
   - Annexure III – FORMAT FOR DRAFT BANK GUARANTEE IN LIEU OF BID SECURITY (EMD)
   - Annexure IV - FORMAT DRAFT COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT/PERFORMANCE GUARANTEE
   - Annexure V – FORM OF LETTER OF UNDERTAKING
   - Annexure VI – DECLARATION TO BE SUBMITTED ALONGWITH Technical BID
   - Annexure VII – STATEMENT OF CEREDENTIALS TO BE SUBMITTED ALONGWITH Technical BID

Thanking you,
Yours faithfully,
For DELHI AVIATION FUEL FACILITY (P) LTD.
Chief Executive Officer

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CHAPTER 2: INSTRUCTIONS TO BIDDERS

1. The bidder shall bear all costs associated with the preparation and submission of the bid and Owner will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

2. The bidders should have valid class 3 Digital sign certificate with encryption.

3. Bidders are requested to register on our E-Tendering portal on https://daffpl.enivida.com

4. Bidder can contact on e-portal helpdesk numbers 011-49606060, 9355030617 during 9:30 hrs to 18:00 hrs for any query/assistance for registration & tender documents submission.

5. Vendor is requested to submit their bids taking full notice of all the technical specifications, terms and conditions, forms & attachments to this tender. Bids must be submitted only through e-Tender portal.

6. Owner reserves the right to accept / reject any or all bid qualification documents at their sole discretion without assigning any reason whatsoever.

7. Owner is not responsible for any delays from bidder end.

8. Owner reserves the right to make any changes in terms and conditions of purchase before due date of bid submission and to reject any or all bids received incomplete.

9. Undertaking by the bidder:
    a. I/we hereby undertake that the statements made herein/information given in the bids through e-Tendering system/annexure/forms referred are true in all respects and that in the event of any such statement or information being found to be incorrect in any particular, the same may be construed to be a misrepresentation entitling DAFFPL to avoid any resultant contract.
    b. I/we further undertake as and when called upon by DAFFPL to produce, for its inspection, original(s) of the document(s) of which copies have been annexed hereto.

10. Owner, at its discretion reserves the right to verify information submitted by the bidders.

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11. Bidder to submit documents/information to satisfy the bid qualification criteria. Bidders should also be able to produce further information as and when required by DAFFPL with in a time limit as specified by DAFFPL.

12. DAFFPL reserves their right to negotiate the quoted prices with lowest bidder.

13. Bidders would be qualified based on data and documents submitted by them.

14. Owner's decision on any matter regarding short listing of vendors shall be final and no corresponding in this regard will be entertained.

15. The vendors who are on IOCL/BPCL/DIAL holiday list or delisted will not be considered.

16. The bidder is expected to examine all instructions, forms, attachments, terms and specifications in the tender document. The entire tender document together with all its attachments thereto, shall be considered to be read, understood and accepted by the bidder, unless deviations are specifically stated seriatim by the bidder. Failure to furnish all information required in the tender document or submission of a bid not substantially responsive to the tender documents in every respect will be at bidder risk and may result in the rejection of his bid. The bidder scope of supplies as specified in the material requisition shall be in strict compliance with the scope detailed therein and in the bid document.

17. Bidders in their own interest shall ensure that they submit their bid, complete in all respects, well within the specified bid due date and time. No relaxation shall be given for delay due to any unforeseen event in submission of bid.

18. At any time prior to the bid due date, we may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bid document. The amendment will be notified through our portal for e-tender to all prospective bidders and will be binding on them. In order to afford prospective bidder, reasonable time in which to take the amendment into account in preparing their bids, we may, at our discretion, extend the bid due date.

19. The bid prepared by the bidder and all correspondence/ drawings and documents relating to the bid exchanged by bidder and the owner shall be written in ENGLISH language, provided that any printed literature furnished by the bidder may be written in another language so long as accompanied by an ENGLISH translation, in which case, for the purpose

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of interpretation of the bid, the ENGLISH translation shall govern.

20. Declaration with the bid qualification criteria that bidder has not been banned or delisted by any Government or quasi Government agencies or Public Sector Undertaking (PSU) as per declaration format (provided as annexure) of the tender document should be submitted along with the bid.

21. Bidders are advised to submit bids based strictly on the terms & conditions and specifications contained in the tender document and not to stipulate any deviations. Each Bidder shall submit only one bid. A Bidder who submits more than one bid will be rejected. Alternative bids will not be accepted.

22. The Owner may, at its discretion, extend the bid due date, in which case all rights and obligations of the Owner and the Bidders, previously subject to the bid due date, shall thereafter be subject to the new bid due date as extended. The same will be hosted in the e-tendering portal.

23. Bids shall be kept valid for 4 months from the bid due date. A bid valid for a shorter period shall be considered as non-responsive and rejected by the Owner. Notwithstanding above, the Owner may solicit the Bidder consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing. The EMD (bid security) shall also be accordingly extended.

24. Telex/ Telegraphic/ Telefax / E-mail/Physical offers will not be considered and shall be rejected.

25. No bid shall be modified subsequent to the due date & time or extension, if any, for submission of bids. Bidder(s) to note that Price changes after submission of bid shall not be allowed. In case any bidder gives revised prices/price implication, his bid shall be rejected. No bid shall be allowed to be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder. Withdrawal of a bid during this interval shall result in the forfeiture of Bidder s EMD.

26. Bids that do not meet the Bid qualification criteria as specified in the bid document shall be rejected. A bid with incomplete scope of work and/or which does not meet the technical requirements as specified in the bid document, shall be considered as non-responsive and rejected. Conditional bids will be liable for rejection.

27. The Owner will examine the bids to determine whether they are

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complete, whether any computational errors have been made, whether the documents have been properly signed and whether the bids are generally in order.

28. The bids without requisite EMD and/or not in the prescribed Performa and the time limit will not be considered and bids of such bidder(s) shall be rejected.

29. PRICE EVALUATION CRITERIA: As award is on overall landed lowest basis, part offers will be rejected. Bidder has to quote for all items in a lot for us to consider them.

30. Prior to the expiration of period of bid validity, the owner will notify the successful bidder in writing or by e-mail, that his bid has been accepted. The Notification of Award will constitute the formation of the Contract. Delivery Period shall be counted from the date of notification of award (Letter/Fax/e-mail of Intent).

31. Any efforts by a bidder to influence the owner/ in the owner bid evaluation, bid comparison or contract award decisions may result in the rejection of their bid.

32. ISSUE OF CONTRACT/ PURCHASE ORDER: After the successful bidder has been notified that his bid has been accepted, DAFFPL will send to such bidder a detailed contract/purchase order incorporating all the terms and conditions agreed between the parties. Within 05 days of receipt of the detailed purchase order, the bidder shall sign and return to the owner the duplicate copy of the order as a token of their acknowledgement.

33. Vigil Mechanism: DAFFPL has developed the Vigil Mechanism to deal with references/ grievances, if any, that is received from bidders who participated / intends to participate in the tender. The details of the same are available on our website www.daffpl.in

34. VERIFICATION BY OWNER: All statements submitted by bidder regarding experience, manpower availability, equipment and machinery availability etc., are subject to verification by the owner either before placement of order or after placement of order. If any data submitted by the bidder at the bid stage is found to be incorrect, the offer is liable to be rejected or the contract/order is liable to be terminated.

35. EVALUATION OF BIDS

a. Qualification of Bidder: The experience details and financial &

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technical capabilities of the bidder(s) shall be examined to determine whether the bidder(s) meet the Bid Qualification Criteria mentioned in the INVITATION FOR BIDS (IFB).

b. The Owner will examine the bids to determine whether they are complete & if they are free of any computational errors, whether the documents have been properly signed and whether the bids are generally in order.

c. The bids without requisite Bid Security and/or not in the prescribed proforma will not be considered and bids of such bidder Bidder(s) shall be rejected.

d. To assist in the examination, evaluation and comparison of technical bids, the owner/ may, at its discretion, ask the Bidder clarifications on the bid. The request for such clarifications and the response thereto shall be through the e-tendering portal.

e. Prior to the evaluation and comparison of the bid, the owner will determine the substantial responsiveness of each bid to the bidding documents. For the purpose of this Article, a substantially responsive bid is one, which conforms to all the terms and conditions of the bidding document without material deviations or reservations. A material deviation or reservation is one which affects in any substantial way the scope, quality, or performance of the works or which limits in any substantial way, inconsistent with the bidding document, the DAFFPL's rights or Bidder's obligation under the contract and retention of which deviation or reservation would affect unfairly the competitive position of other bidders presenting substantially responsive bids. The owner's determination of bid responsiveness is to be based on the contents of the bid itself without recourse to the extrinsic evidence.

f. A bid determined as substantially non-responsive after final evaluation will be rejected by the Owner and shall not subsequently be allowed by the Owner to be made responsive by the Bidder by correction of the non-conformity.

g. The Bidders qualifying the initial criteria as set out will be evaluated for the following criteria by scoring method based on details furnished by them.

DAFFPL, however, reserves the right to restrict the list of such qualified contractors to any number deemed suitably by it.

Note:

1) **The Bid Shall be submitted in English Language Only**
2) **For any Document submitted in any language other than English, the translation copy in English language shall be submitted.**

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CHAPTER 3: BID-QUALIFICATION CRITERIA

Bidders need to meet following pre-qualification criteria to qualify for short-listing as a successful vendor for this tender;

- ***Technical Criteria:***

  The bidder shall have satisfactorily executed either of the following during the last 7 years ending 31/03/2022:

  The Bidder should have completed at least **one similar work,** costing not less than **INR 335 LAKHS.**

  OR

  The Bidder should have completed at least **two similar works,** each costing not less than **INR 270 LAKHS.**

  OR

  The Bidder should have completed at least **three similar works,** each costing not less than **INR 200 Lakhs.**

Notes:

a. Similar works means construction of vertical above ground tank according to API650 with minimum 8 m diameter.
b. Bidder to submit work completion certificates/proof of work executed against orders submitted by them to fulfill criteria mentioned above.

FINANCIAL CAPACITY

Bidder shall have minimum average annual turnover of **Rs. 400.00 Lakhs** as per audited financial results in the preceding three financial/calendar years. "Turnover shall mean Consolidated Turnover in case of a Bidder having wholly owned subsidiaries"

Bidder

Note: Turnover for this purpose should be as per audited P&L statement including Balance Sheet/ Published Account/ Profit & Loss Account Statement of the tenderer. However, if the tenderer is not required to get its accounts audited under Section 44AB of the Income Tax Act, 1961, (Applicable for FY21-22 as well, in case financial statement of bidder has not been audited at the time of submission of bids) certificate from a practicing Chartered Accountant towards the turnover of the tenderer along with copies of its income tax return should be obtained.

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Total revenue as per schedule III of companies' act, 2013 (earlier revised schedule VI of companies Act, 1956) shall be considered as Turnover. Audited balance sheet / published accounts on calendar year basis shall also be acceptable. The financial statements copy must bear the registration number of the authorised chartered accountant and its seal. (This is not applicable for published annual reports).

- Both the above criteria (Technical & Financial) to be met for acceptance of the bid.

OTHER INFORMATION OF BQC

1. Parties who are affiliates of one another can decide which affiliate will make a bid. Only one affiliate may submit a bid. Two or more affiliates are not permitted to make separate bids directly or indirectly. If 2 or more affiliates submit a bid, then any one or all of them are liable for disqualification. However up to 3 affiliates may make a joint bid as a consortium, and in which case the conditions applicable to a consortium shall apply to them. "Affiliate" of a Party shall mean any company or legal entity which:
    a. Controls either directly or indirectly a Party, or
    b. Which is controlled directly or indirectly by a Party; or
    c. Is directly or indirectly controlled by a company, legal entity or Partnership which directly or indirectly controls a Party. "Control" means actual control or ownership of at least a 50% voting or other controlling interest that gives the power to direct, or cause the direction of, the management and material business decisions of the controlled entity.
2. Bids may be submitted by:
    a. A single person/ entity (called sole bidder):
    b. A newly formed incorporated joint venture (JV) which has not completed 3 financial years from the date of commencement of business;
    c. A consortium (including an unincorporated JV) having a maximum of 3 (three) members;
    d. An Indian arm of a foreign company.
3. Fulfillment of Eligibility criteria and certain additional conditions in respect of each of the above 4 types of bidders are stated below, respectively:
    a. The sole bidder (including an incorporated JV which has completed 3 financial years after date of commencement of business) shall fulfill each eligibility criteria.
    b. In case the bidder is a newly formed and incorporated joint venture and which has not completed three financial years from

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the date of commencement of business, then either the said JV shall fulfill each eligibility criteria or any one constituent member/ promoter of such a JV shall fulfill each eligibility criteria. If the bid is received with the proposal that one constituent member/ promoter fulfils each eligibility criteria, then this member/promoter shall be clearly identified and he/it shall assume all obligations under the contract and provide such comfort letter/guarantees as may be required by Owner. The guarantees shall cover inter alia the commitment of the member/ promoter to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the JV to ensure completion of the contract when awarded, an undertaking not to withdraw from the JV till completion of the work, etc.

c. In case the bidder(s) is/are a consortium (including an unincorporated JV), then the following conditions shall apply:
   I. Each member in a consortium may only be a legal entity and not an individual person;
   II. The Bid shall specifically identify and describe each member of the consortium;
   III. the consortium member descriptions shall indicate what type of legal entity the member is and its jurisdiction of incorporation (or of establishment as a legal entity other than as a corporation) and provide evidence by a copy of the articles of incorporation (or equivalent documents);
   IV. One participant member of the consortium shall be identified as the "Prime member" and contracting entity for the consortium;
   V. This prime member shall be solely responsible for all aspects of the Bid/ Proposal including the execution of all tasks and performance of all consortium obligations;
   VI. The prime member shall fulfill each eligibility criteria;
   VII. a commitment shall be given from each of the consortium members in the form of a letter signed by a duly authorized officer clearly identifying the role of the member in the Bid and the member's commitment to perform all relevant tasks and obligations in support of the
   VIII. Prime/lead member of the Consortium and a commitment not to withdraw from the consortium;
   IX. No change shall be permitted in the number, nature or share holding pattern of the Consortium members after pre-qualification, without the prior written permission of the Owner.
   X. No change in project plans, timetables or pricing will be permitted as a consequence of any withdrawal or failure to

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perform by a consortium member;

XI. Entities which are affiliates of one another are allowed to bid either as a sole bidder or as a consortium only;

XII. Any person or entity can bid either singly or as a member of only one consortium.

d. In case the bidder is an Indian arm (subsidiary, authorized agent, branch office or affiliate) of a foreign bidder, then the foreign bidder shall have to full fill each eligibility criteria. If such foreign company desires that the contract be entered into with the Indian arm, then a proper back to back continuing (parent company) guarantee shall be provided by the foreign company clearly stating that in case of any failure of any supply or performance of the equipment, machinery, material or plant or completion of the work in all respects and as per the warranties/ guarantees that may have been given, then the foreign company shall assume all obligations under the contract. Towards this purpose, it shall provide such comfort letter/guarantees as may be required by Owner. The guarantees shall cover inter alia the commitment of the foreign company to complete the entire work in all respects and in a timely fashion, being bound by all the obligations under the contract, an undertaking to provide all necessary technical and financial support to the Indian arm or to render the same themselves so as to ensure completion of the contract when awarded, an undertaking not to withdraw from the contract till completion of the work, etc.

OTHER MANDATORY REQUIREMENTS

a. Bidder or Design Agency(company/firm) to be hired by the bidder for detailed engineering, designing & creation of drawings for this tender shall have carried out detailed engineering/designing of a tank according to API650 which has been constructed.

   Bidder will submit proof w.r.t designing of tank according to API650 either done by the bidder himself or the Design Agency(company/firm) to be hired by the bidder. The agency cannot be changed without the approval of DAFFPL at a later stage, new agency if proposed shall have to meet same qualification criteria.

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CHAPTER 4: PERFORMANCE OF WORK

1. EXECUTION OF WORKS:
    a. The Bidder shall quote for the entire Works, such that the total Tender (lump sum) price inter-alia covers break ups of the price of all cost centers and applicable taxes thereon, if any, along with all its risks, obligations and liabilities set out in or to be reasonably inferred from the Tender Documents in respect of the procurement, supply, construction, erection, installation, setting to work, testing, pre commissioning, successful commissioning and completion of the Works, all in accordance with the requirements of the tender and applicable laws. All the works shall be executed in strict conformity with the provisions of the contract documents and with such explanatory detailed drawings, specifications, and instructions as may be. The contractor shall be responsible for ensuring that works throughout are executed in the most substantial, proper and workman like manner with the quality of material and workmanship in strict accordance with the specifications following all safety requirements and to the entire satisfaction of the DAFFPL.

       The bidders are required to note that the contract shall be awarded and the works shall be executed on a lump sum price basis and not on unit rate basis and the unit rates provided in the bill of quantities have been provided only for the purpose of providing the basis of deriving the lump sum price. bidders must note that the bill of quantities is solely for guidance purposes.

    b. Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities/materials, it is understood that the contractor shall do, so at his cost unless otherwise specified.
    c. The materials, design and workmanship shall satisfy the relevant Indian Standards, the Job specification contained herein and codes referred to. Where the job specification stipulate requirements in addition to those contained in the standards codes and specifications, these additional requirements shall also be satisfied.

2. MATERIALS TO BE SUPPLIED BY CONTRACTOR:
    a. The contractor shall procure and provide the whole of the materials required to complete the job including tools, tackles and equipment etc. The materials procured by the contractor shall be DAFFPL approved/specified quality.
    b. All materials procured/used should meet the specifications given in the tender document. The Engineer-in-Charge may, at his

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discretion, ask for samples and test certificates for any batch of any material. Before procuring, the contractor should get the approval of Engineer-in-Charge for any material to be used for the works.

c. Manufacturer's certificate shall be submitted for all materials supplied by the contractor. If, however, in the opinion of the Engineer-in-Charge any tests are required to be conducted on the materials supplied by the contractor, these will be arranged by the contractor promptly at his own cost.

3. EXECUTION OF WORKS:
   a. All the works shall be executed in strict conformity with the provisions of the contract documents and with such explanatory detailed drawings, specifications, and instructions as may be furnished from time to time to the contractor by the Engineer-in-Charge whether mentioned in the contract or not. The contractor shall be responsible for ensuring that works throughout are executed in the most substantial, proper and workman like manner with the quality of material and workmanship in strict accordance with the specifications following all safety requirements of DAFFPL and as stipulated in work permits as per the directions and to the entire satisfaction of the Engineer-in-Charge.
   b. Wherever it is mentioned in the specifications that the Contractor shall perform certain work or provide certain facilities/materials, it is understood that the contractor shall do, so at his cost unless otherwise specified.
   c. The materials, design and workmanship shall satisfy the relevant Indian Standards, the Job specification contained herein and codes referred to. Where the job specification stipulate requirements in addition to those contained in the standards codes and specifications, these additional requirements shall also be satisfied.

4. COORDINATION AND INSPECTION OF WORK:
   The coordination and inspection of the day-to-day work under the contract shall be the responsibility of the Engineer-in-Charge. The written instructions regarding any particular job will be normally be passed by the Engineer-in-Charge or his authorized representative. A work order book / logbook will be maintained by the Contractor for each job in which the aforesaid written instructions will be entered. These will be signed by the contractor or his authorized representative by way of acknowledgment within 12 hours. The non-maintaining of the order book or non-signing by the contractor shall not preclude the contractor from complying with the instructions.

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5. WORK IN MONSOON AND DEWATERING:
    a. The completion of the work may entail working in the monsoon also. The contractor must maintain a minimum labour force as may be required for the job and plan and execute the construction and erection according to the prescribed schedule. No extra rate will be considered for such work in monsoon.
    b. During monsoon and other period, it shall be the responsibility of the contractor to keep the construction work site free from water at his own cost.

6. WORK ON SUNDAYS AND HOLIDAYS:
   For carrying out work on Sundays and Holidays if needed, the contractor will approach the Engineer-in-Charge or his representative at least two days in advance and obtain permission in writing. No special compensation on this account will be payable.

7. GENERAL CONDITIONS FOR CONSTRUCTION AND ERECTION WORK:
    a. Place of Work: The work has to be executed at specified premises as per the tender. Contractor should apprise himself of all the conditions prevailing in such location and the restrictions placed on movement of personnel and equipment, types of equipment and tools permitted, working methods allowed etc. in the light of security and safety regulations operative in the area. The safety regulations to be complied with, by the contractor will also be provided along with the tender. No idle time wages or compensation for temporary stoppage of work or restrictions would be paid, and the rate quoted for the various items of work should cover the cost of all such contingencies and eventualities. Substantial structures and utilities exist both above ground and underground, adjacent to the work site. (The construction activity gets restrained by the existence of such structures and utilities). Special care is necessary in transportation, storage, working on equipment's and other construction activities to protect the existing features and prevent damage to any facility. Necessary protective structures barricades etc. have to be erected at various places as directed by Engineer-in-Charge. No extra payment of such protective works will be made unless specially provided in the tender.
    b. The working time or the time of work is 48 hours per week normally. Overtime work is permitted in cases of need and the Owner will not compensate the same. Shift working at 2 or 3 shifts per day may become necessary and the contractor should take this aspect into consideration for formulating his rates for quotation. No extra claims will be entertained by the Owner on this account.
    c. The contractor must arrange for the placement of workers in such a way that the delayed completing of the work or any part thereof for

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any reasons whatsoever will not affect their proper employment. The Owner will not entertain any claim for idle time payment whatsoever.

d. The contractor shall submit to the Owner reports at regular intervals regarding the state and progress of work. The details and preforma of the report will mutually be agreed after the award of contract.

8. DRAWINGS TO BE SUPPLIED BY THE OWNER:
   a. Where drawings are attached with tender, these shall be for the general guidance of the contractor to enable him to visualize the type of work contemplated and scope of work involved. The contractor will be deemed to have studied the drawings and formed an idea about the work involved.
   b. Detailed working drawings on the basis of which actual execution of the work is to proceed will be furnished from time to time during the progress of the work. The contractor shall be deemed to have gone through the drawings supplied to him thoroughly and carefully and in conjunction with all other connected drawings and bring to the notice of the Engineer-in-Charge, discrepancies, if any, therein before actually carrying out the work.
   c. Copies of all detailed working drawings relating to the works shall be kept at the contractor's office of the site and shall be made available to the Engineer-in-Charge at any time during the contract. The drawings and other documents issued by the Owner shall be returned to the Owner on completion of the works.

9. SETTING OUT WORKS:
   a. The Engineer-in-Charge shall furnish the contractor with only the four corners of the work site and a level bench mark and the contractor shall set out the works and shall provide efficient staff for the purpose and shall be solely responsible for the accuracy of such setting out.
   b. The contractor shall provide, fix and be responsible for the maintenance of all stacks, templates, level marks, profiles and other similar things and shall take all necessary precaution to prevent their removal or disturbance and shall be responsible for the consequence of such removal or disturbance should the same take place and for their efficient and timely reinstatement. The contractor shall also be responsible for the maintenance of all existing survey marks, boundary marks, distance marks and centre line marks, either existing or supplied and fixed by the contractor. The, work shall be set out to the satisfaction of the Engineer-in-Charge. The approval thereof or joining in setting out the work shall not relieve the contractor of any of his responsibilities.

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c. Before beginning the works, the contractor shall at his own cost, provide all necessary reference and level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme, for bearing marks acceptable to the Engineer-in-Charge. The centre, longitudinal or face lines and cross lines shall be marked by means of small masonry pillars. Each pillar shall have distinct marks at the centre to enable theodolite to be set over it. No work shall be started until all these points are checked and approved by the Engineer-in-Charge in writing but such approval shall not relieve the contractor of any of his responsibilities. The contractor shall also provide all labour, material and other facilities, as necessary, for the proper checking of layout and inspection of the points during construction.
d. Pillars bearing geodetic marks located at the site of work under construction should be protected and fenced by the contractor.
e. On completion of works, the contractor must submit the geodetic documents according to which the work was carried out.

10. RESPONSIBILITY FOR LEVEL AND ALIGNMENT:

The contractor shall be entirely and exclusively responsible for the horizontal and vertical alignment, the levels and correctness of every part of the work and shall rectify effectually any errors or imperfections therein. Such rectifications shall be carried out by the contractor, at his own cost, when instructions are issued to that effect by the Engineer-in-Charge.

11. MATERIALS TO BE SUPPLIED BY CONTRACTOR:

d. The contractor shall procure and provide the whole of the materials required for construction including tools, tackles, construction plant and equipment for the completion and maintenance of the works except the materials which will be issued by Owner and shall make his own arrangement for procuring such materials and for the transport thereof. The materials procured by the contractor shall be DAFFPL approved/specified quality.
e. All materials procured should meet the specifications given in the tender document. The Engineer-in-Charge may, at his discretion, ask for samples and test certificates for any batch of any material procured. Before procuring, the contractor should get the approval of Engineer-in-Charge for any material to be used for the works.
f. Manufacturer's certificate shall be submitted for all materials supplied by the contractor. If, however, in the opinion of the Engineer-in-Charge any tests are required to be conducted on the materials supplied by the contractor, these will be arranged by the contractor promptly at his own cost.

12. MATERIALS SUPPLIED BY OWNER:

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a. If the specifications of the work provides for the use of any materials of special description to be supplied from the Owner's stores, price for such material to be charged therefore as herein after mentioned being so far as practicable for the convenience of the contractor but not so as in any way to control the meaning or effect of the contract. The contractor shall be bound to purchase and shall be supplied such materials as are from time to time required to be used by him for the purpose of the contract only. The sums due from the contractor for the value of the actual materials supplied by the Owner will be recovered from the running account bill on the basis of the actual consumption of materials in the work covered and for which the running account bill has been prepared. After the completion of the works, however, the contractor has to account for the full quantity of materials supplied to him as per relevant clauses in this document.
b. The value of the materials as may be supplied to the contractor by the Owner will be debited to the contractor's account at the rates shown in the schedule of chargeable materials and if they are not entered in the schedule, they will be debited at cost price, which for the purpose of the contract shall include the cost of carriage and all other expenses whatsoever such as normal storage supervision charges which shall have been incurred in obtaining the same at the Owner's stores. All materials so supplied to the contractor shall remain the absolute property of the Owner and shall not be removed on any account from the site of the work, and shall be at all times open for inspection to the Engineer-in-Charge. Any such materials remaining unused at the time of completion or termination of the contract shall be returned to the Owner's stores or at a place as directed by the Engineer-in- Charge in perfectly good condition, at contractor's cost.

13. CONDITIONS FOR ISSUE OF MATERIALS:

a. Materials specified to be issued by the Owner will be supplied to the contractor by the Owner from his stores/location. It shall be the responsibility of the contractor to take delivery of the materials and arrange for its loading, transport and unloading at the site of work at his own cost. The materials shall be issued between the working hours and as per the rules of the Owner framed from time to time.
b. The contractor shall bear all incidental charges for the storage and safe custody of materials at site after these have been issued to him.
c. Materials specified to be issued by the Owner shall be issued in standard sizes as obtained from the manufacturer.
d. The contractor shall construct suitable godown at the site of work for storing the materials safe against damage by rain, dampness, fire,

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theft etc. He shall also employ necessary watch and ward establishment for the purpose.

e. It shall be duty of the contractor to inspect the material supplied to him at the time of taking delivery/bidding for these works and satisfy himself that they are in good condition. After the materials have been delivered by the Owner, it shall be the responsibility of the contractor to keep them in good condition and if the materials are damaged or lost, at any time, they shall be repaired and/ or replaced by him at his own cost, according to the directions of the Engineer-in-Charge.

f. The Owner shall not be liable for delay in supply or non-supply of any materials which the Owner has undertaken to supply where such failure or delay is due to natural calamities, act of enemies, transport and procurement difficulties and any circumstances beyond the control of the Owner. In no case, the contractor shall be entitled to claim any compensation or loss suffered by him on this account.

g. It shall be the responsibility of the contractor to arrange in time all materials required for the works other than those to be supplied by the Owner. If, however, in the opinion of the Engineer-in-Charge the execution of the work is likely to be delayed due to the contractor's inability to make arrangements for supply of materials which normally he has to arrange for, the Engineer-in-Charge shall have the right, at his own discretion, to Issue such materials If available with the Owner or procure the materials from the market or elsewhere and the contractor will be bound to take such materials at the rates decided by the Engineer-in-Charge. This, however, does not in any way absolve the contractor from responsibility of making arrangements for the supply of such materials in part or in full, should such a situation occur, nor shall this, constitute a reason for the delay in the execution of the work.

h. None of the materials supplied to the contractor will be utilized by the contractor for manufacturing item, which can be obtained from standard manufacturer in finished form.

i. The contractor shall, if desired by the Engineer-in-Charge, be required to execute an indemnity bond for safe custody and accounting of all materials issued by the Owner.

j. The contractor shall furnish to the Engineer-in-Charge sufficiently in advance a statement showing his requirements of the quantities of the materials to be supplied by the Owner and the time when the same will be required by him for the works, so as to enable the Engineer-in-Charge to make necessary arrangement for procurement and supply of the material.

k. A daily account of the materials issued by the Owner shall be maintained by the contractor indicating the daily receipt, consumption and balance in hand. This account shall be

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maintained in a manner prescribed by the Engineer-in-Charge along with all connected papers viz. requisition, issues etc. and shall be always available for inspection in the contractor's office at site.

l. The contractor should see that only the required quantities of materials are got issued. The contractor shall not be entitled to cartage and incidental charges for returning the surplus materials, if any, to the stores/location where from they were issued or to the place as directed by the Engineer-in-Charge.

m. Materials/ Equipment supplied by Owner shall not be utilized for any other purpose(s) than issued for.

14. MATERIALS PROCURED WITH ASSISTANCE OF OWNER:

Notwithstanding anything contained to the contrary in any or all the clause of this document where any materials for the execution of the contract are procured with the assistance of Owner either by issue from Owner's stock or purchase made under orders or permits or licences issued by Government, the contractor shall hold the said materials as trustee for the Owner and use such materials economically and solely for the purpose of the contract and not dispose them off without the permission of the owner and return, if required by the Engineer-in-Charge, all surplus or unserviceable materials that may be left with him after the completion of the contract or at its termination for any reason, whatsoever on his being paid or credited such prices as the Engineer in-Charge shall determine having due regard to the condition of the materials. The price allowed to the contractor however, shall not exceed the amount charged to him excluding the storage charges if any. The decision of the Engineer-in- Charge shall be final and conclusive in such matters. In the event of breach of the aforesaid condition, the contractor shall in terms of the licenses or permits, and/or for criminal breach of trust, be liable to compensate the Owner a double rate or high rate, in the event of those materials at that time having higher rate or not being available in the market, then any other rate to be determined by the Engineer-in-Charge and his decision shall be final and conclusive.

15. MATERIALS OBTAINED FROM DISMANTLING:

If the contractor in the course of execution of the work is called upon to dismantle any part for reasons other than those stipulated in clauses 64 & 68 hereunder, the materials obtained in the work of dismantling etc. will be considered as the Owner's property and will be disposed off to the best advantage of the Owner.

16. ARTICLES OF VALUE FOUND:

All gold, silver and other materials, of any description and all precious stones, coins, treasure relies, antiquities and other similar things which shall be found in, under or upon the site, shall be property of the Owner and

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the contractor shall duly preserve the same to the satisfaction of the Engineer-in-Charge and shall from time to time deliver the same to such person or person indicated by the Owner.

17. DISCREPANCIES BETWEEN INSTRUCTIONS:
Should any discrepancy occur between the various instructions furnished to the contractor, his agents or staff or any doubt, arise as to the meaning of any such instructions or should there be any misunderstanding between the contractor's staff and the Engineer-in-Charge's staff, the contractor shall refer the matter immediately in writing to the Engineer-in-Charge whose decision thereon shall be final and conclusive and no claim for losses alleged to have been caused by such discrepancies between instructions, or doubts, or misunderstanding shall in any event be admissible.

18. ALTERATIONS IN SPECIFICATIONS AND DESIGNS AND EXTRA WORK:
    a. The Engineer-in-Charge shall have power to make any alterations in, omissions from, additions to of substitutions for, the schedule of rates, the original specifications, drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the work and the contractor shall be bound to carry out such altered / extra / new items of work in accordance with any instructions which may be given to him in writing signed by the Engineer-in-Charge and such alterations, omissions, additions or substitutions shall not invalidate the contract and any altered additional or substituted work which the contractor may be directed to do in the manner above specified as part of the work shall be carried out by the contractor on the same conditions in all respect on which he agree to do the main work. The time for completion of work may be extended for the part of the particular job at the discretions of the Engineer-in-Charge, for only such alteration, additions or substitutions of the work, as he may consider as just and reasonable. The rates for such additional, altered or substituted work under this clause shall be worked out in accordance with the following provisions:

    Works defined/showcased/depicted in drawings/scope of works/indicative BOQs/specifications if altered while construction at site shall not constitute as "additional work".

    - If the rates for the additional, altered or substituted work are specified in the contract for the work, the contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract.

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- If the rates for the additional, altered or substituted work are not specifically provided in the contract for the work, the rates will be derived from the rates for similar class of works as specified in the contract for the work. The opinion of the Engineer-in-Charge as to whether the rates can be reasonably so derived from items in the contracts will be final and binding on the contractor.

19. ACTION WHERE NO SPECIFICATIONS ISSUED:
In case of any class of work for which there is no such specification given by the Owner in the tender documents, such work shall be carried out in accordance with Indian Standard Specifications and if the Indian Standard Specifications do not cover the same the work should be carried out as per standard Engineering Practice subject to the approval of the Engineer-in-Charge.

20. ABNORMAL RATES:
The contractor is expected to quote rate for each item after analysis of cost involved for the completion of item/work, considering all specifications and conditions of contract. This will avoid loss of profit or gain, in case of curtailment or change of specification for any item. In case it is noticed that the rates for any item, quoted by the tenderer unusually are high or unusually low it will be sufficient cause for the rejection of the tender unless the Owner is convinced about the reasonableness of the rates on scrutiny of the analysis for such rate to be furnished by the tenderer on demand.

21. INSPECTION OF WORK:
a. The Engineer-in-Charge will have full power and authority to inspect the works at any time wherever in progress either on the Site or at the contractor's premises / workshop where situated premises /workshops of any person, firm or corporation where work in connect with the contract may be in hand or where materials are being or are to be supplied, and the contractor shall afford or procure for the Engineer-in-Charge every facility and assistance to carry out such Inspection. The contractor shall at all time during the usual working hours and at all other time for which reasonable notice of the intention of the Engineer in-Charge or his representative to visit the works have been given to the contractor, either himself be present to receive order and instructions or post a responsible agent duly accredited in writing for the purpose. Orders given to the contractor's agent shall be considered to have the same force as if they had been given to the contractor himself. The contractor shall give not less than seven days, notice in writing to the Engineer-in-Charge before covering up or placing any work

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beyond reach of inspection and measurement any work in order that the same may be inspected and measured. In the event of breach of above the same shall be uncovered at contractor's expense carrying out such measurement or inspection.

b. No materials shall be dispatched by the contractor before obtaining the approval of Engineer-in-Charge in writing. The contractor is to provide at all times during the progress of the work and the maintenance period, proper means of access with ladders, gangways, etc. and the necessary attendance to move and adopt as directed for inspection or measurement of the works by the Engine in-Charge.

22. ASSISTANCE TO THE ENGINEERS:

The contractor shall make available to the Engineer-in-Charge, free of cost necessary instruments and assistance in checking of setting out of works and taking measurement of work.

23. TESTS FOR QUALITY OF WORKS:

a. All workmanship shall be of the respective kinds described in the contract documents and in accordance with the instructions of the Engineer-in-Charge and shall be subjected from time to time to such test at contractor's cost as the Engineer-in-Charge may direct at place of manufacture or fabrication or on the site or at all or any such places. The contractor shall provide assistance, instruments, labour and materials as are normally required for examining, measuring and testing any workmanship as may be selected and required the Engineer-in-Charge.

b. All the tests necessary in connection with the execution of the work as decided by Engineer-in-Charge shall be carried out at the field testing laboratory of the Owner by paying the charges as decided by the Owner from time to time. In case of non-availability of test facility with the Owner, the required test shall be carried out at the cost of contractor at government or any other testing laboratory as directed by Engineer-in-Charge.

c. If any tests are required to be carried out in connection with the work or materials workmanship not supplied by the contractor, such tests shall be carried out by the contractor as per the instructions of Engineer-in-Charge and cost of such tests shall be reimbursed by the Owner.

24. SAMPLES:

The contractor shall furnish to the Engineer-in-Charge for approval when requested or if required by the specifications, adequate samples of all materials and finishes to be used in the work. Such samples shall be submitted before the work is commenced and in ample time to permit

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tests and examinations thereof. All materials furnished and finishing applied in actual work shall be fully identical to the approval samples.

25. ACTION AND COMPENSATION IN CASE OF BAD WORK:

If it shall appear to the Engineer-in-Charge that any work has been executed with unsound, imperfect or unskilled workmanship or with materials of any inferior description, or that any materials or articles provided by the contractor for the execution of the work are unsound or of a quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Engineer-in-Charge or his authorized representative, specifying the work, materials or articles complained of, notwithstanding that the same have been inadvertently passed, certified and paid for forthwith shall rectify or remove and reconstruct the works specified and provide other proper and suitable materials or articles at his own charge and cost, and in the event of failure to do so within a period to be specified by the Engineer-in-Charge in his demand aforesaid, the contractor shall be liable to pay compensation at the rate of 0.5% of the estimated cost of the whole work, for every week limited to a maximum of 10% of the estimated cost of the whole work, while his failure to do so shall continue and in the case of any such failure the Engineer-in-Charge may on expiry of notice period rectify or remove and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expenses of the contractors in all respects. The decision of the Engineer-in-Charge as to any question arising under this clause shall be final and conclusive.

26. SUSPENSION OF WORKS:

The contractor shall, if ordered in writing by the Engineer-in-Charge or his representative, temporarily suspend the works or any part thereof for such period and such time as so ordered and shall not, after receiving such written order, proceed with the work therein ordered to be suspended, until he shall have received a written order to proceed therewith. The contractor shall not be entitled to claim/ compensation for any loss or damage sustained by him by reason of temporary suspension of the works aforesaid. An extension of time for completion, corresponding with the delay caused by any such suspension of the works as aforesaid will be granted to the contractor, should he apply for the same, provided that suspension was not consequent to any default or failure on the part of the contractor.

27. OWNER MAY DO PART OF WORK:

Upon failure of the contractor to comply with any instructions given in accordance with the provisions of the contract, the owner has the alternative right, instead of assuming charge for entire work to place

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additional labour force, tools, equipments and materials on such parts of the work, as the owner may designate or also engage another contractor to carry out the work. In such cases, the owner shall deduct from the amount which otherwise might become due to the contractor, the cost of such work and materials with ten percent added to cover all departmental charges and should the total amount thereof exceed the amount due to the contractor, the contractor shall pay the difference to the owner.

28. POSSESSION PRIOR TO COMPLETION:

The Engineer-in-Charge shall have the right to take possession of or use any completed or partially completed work or part of the work. Such possessions or use shall not be deemed to be an acceptance of any work completed in accordance with the contract agreement. If such prior possession or use by the Engineer-in-Charge delays the progress of work, suitable adjustment in the time of completion will made and contract agreement shall be deemed to be modified accordingly.

29. PERIOD OF LIABILITY FROM THE DATE OF COMPLETION OF WORK:

a. The contractor shall guarantee the installation/site work for a period of 12 (twelve) Months from the date of completion of work, unless otherwise specified. Any damage that may lie undiscovered at the time of issue of completion certificate, connected in any way with the equipment or materials supplied by him or in the workmanship shall be rectified or replaced by the contractor at his own expense as deemed necessary by the Engineer-in-Charge or in default, the Engineer-in-Charge may cause the same made good by other workmen and deduct expenses (for which the certificate of Engineer-in-Charge shall be final) from any sums that may be then or at any time thereafter, become due to the contractor or from his security deposit.

b. If the contractor feels that any variation in work or in quality of materials or proportions would be beneficial or necessary to fulfill the guarantee called for, he shall bring this to the notice of the Engineer-in-Charge in writing. The work will not be considered as complete and taken over by the Owner until all the temporary works etc., constructed by the contractor is removed and work site cleaned to the satisfaction of Engineer-in-Charge.

c. Care of Works:

From the commencement to completion of works, the contractor shall take full responsibility for the care of all works including all temporary works, and in case any damage, loss or injury happens to the works or to any part thereof or to any temporary work, from any cause whatsoever, he shall at own cost repair and make good the same, so that at completion, the work shall be in good order and in

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conformity in every respect with the requirements of the contract and the Engineer-in-Charge's instructions.

d. Effects prior to taking over: If at any time, before the work is taken over, the Engineer-in-Charge shall
   - Decide that any work done or materials used by the contractor or any sub-contractor is defective or not in accordance with the contract or that the works or any portion thereof are defective or do not fulfill the requirements of contract (all such matters being herein after called 'Defects' in this clause) and
   - As soon as reasonably practicable, notice given to the contractor in writing of the said decisions specifying particulars of the defects alleged to exist or to have occurred, then the contractor shall at his own expenses and with all speed make good the defects so specified. In the case contractor shall fail to do so, the Owner may take, at the cost of the contractor, such steps as may in all circumstances, be reasonable to make good such defects. The expenditure, so incurred by the Owner shall be recovered from the amount due to the contractor. The decision of the Engineer-in-Charge with regard to the amount be recovered from the contractor will be final and binding on the contractor. As soon as the works have been completed in accordance with the contract and have passed the tests on completion, the Engineer-in-Charge shall issue a certificate (hereinafter called completion certificate) in which he shall certify the date on which the work have been so completed and have passed the said tests and the Owner shall be deemed to have taken over the works on the date so certified. If the works have been divided into various groups in the contract, the Owner shall be entitled to take over any group or groups before the other or others and thereupon the Engineer-in-Charge shall issue a completion certificate which will however, be for such group or groups as taken over only.

e. Defects after taking over: In order that the contractor could obtain a completion certificate, he shall make good with all possible speed, any defect arising from the defective materials supplied by the Contractor or workmanship or any act of omission of the contract that may have been noticed or developed after the works or group of the works has been taken over. The period allowed for carrying out such work will be normally one month. If any defect be not remedied within a reasonable time, the Owner may proceed to do the work at the contractor's risk and expense and deduct from the final bill such amount as may be decided by the Owner. If by reason of any default on the part of the contractor a completion

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certificate has not been issued in respect of every portion of the work within one month after the date fixed by the contract for the completion of the works, the Owner shall be at his liberty to use the works or any portion thereof in respect of which a completion certificate has been issued provided that the works or the portion thereof so used as aforesaid shall be afforded reasonable opportunity for completing these works for the issue of completion certificate.

f. The Security Deposit/retention money deducted / furnished shall be retained for the period of liability as given in clause above. This Retention amount or Bank Guarantee furnished against Security Deposit/retention money shall be released only on expiry of the period of liability and also based on the certification of the Engineer-in-charge that no defect/damage has been reported / observed during the stipulated period of liability for the contract.

g. Performance of contractor shall be evaluated on each job by Engineer-in-Charge and recorded. Review of performance will be carried out at appropriate intervals by DAFFPL.

CHAPTER 5: GENERAL TERMS & CONDITIONS

1. General:
   The materials and workmanship shall satisfy the relevant Indian Standards, the job specifications contained herein & codes referred to. Where the job specifications stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied.

   In the absence of any standard / specification / codes of practice for detailed specifications covering any part of the work covered in this tender document, the instruction / direction of consultant engineer will be binding on the contractor.

   Wherever it is stated in this tender document that a particular supply is to be affected or that a particular work is to be carried out, it shall be understood that the same shall be affected / carried out by the contractor at his cost, unless a different intention is specifically and expressly stated herein or otherwise explicit from the context.

2. DAFFPL reserves the right to accept any tender in whole and reject any or all tenders without assigning any reason. DAFFPL also reserves the right to allow public enterprises (Central/State) Price / purchase /contract / service preference as admissible under the Indian Government Policy.

3. Construction Program:

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A detailed bar chart showing various activities shall be prepared by the tenderers. The work shall be executed strictly as per the agreed time schedule. The period of completion shall include, the time required for mobilization and testing as well as rectification, if any, testing & completion in all respects to the entire satisfaction of the consultant.

A joint programme of execution programme shall be prepared by the contractor.

Monthly / weekly construction programme shall be made by the contractor. The contractor shall scrupulously adhere to these targets / programme by deploying adequate personal and construction tools and tackles. He shall also supply all materials in his scope of supply in time to achieve the targets set out in the weekly and the monthly programme.

The contractor shall give every day, a report on labour and equipment deployed along with the progress of the work done on previous day, for each category of work.

Contractor shall intimate the fuel farm operator, EIC & DAFFPL a month in advance about their plans to take shutdown of any facility/equipment/tank etc. inside the fuel farm.

In case of any delay in handover of any facility as per approved / mutually agreed plan to the contractor by the Fuel Farm Operator/DAFFPL, Or any other hinderance beyond the contractor's scope/control (as approved by EIC) the delay period shall be added to the delivery period of this contract. The hinderance register has to be maintained by the contractor duly approved/counter signed by EIC on the day/time of hinderance. The liquidated damages shall be calculated on the basis of scheduled completion & actual data from hinderance register.

The decision of EIC shall be binding on the contractor & non-negotiable.

4. Construction Water and Power:

- ✓ The contractor has to make necessary arrangement for metering and further distribution for power required for job at no extra cost. All arrangement/material shall be as per electrical rules/standards/Approved makes.
- ✓ Electricity will be provided by DAFFPL @ Rs. 18.00 per unit plus tax.
- ✓ Water will be provided at a point inside the terminal and the contractor then has to be make subsequent arrangements at no extra cost.

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- ✓ Tariffs are subjected to change as per revisions.
- ✓ The DAFFPL shall not take any guarantee for the supply of water & electricity and will not relieve the contractor of his responsibility in making his own arrangement and for the timely completion of the various works as stipulated.

5. Safety Rules and Regulations:
   All Safety rules and regulations of the terminal operator have to be followed by the contractor without fail. If any damage occurs due to negligence of safety, contractor will be held responsible for the same.

6. Tests and Inspection:
   The contractor shall carry out the various tests as enumerated in the technical specifications of this tender document and the technical documents that will be furnished to him during the performance of the work. No separate payment shall be made.

   The contractor shall carry out at his cost, all the tests either on the field or through external institutions / laboratories, concerning the execution of the work and supply of materials by the contractor.

   Any work not conforming to the execution drawings, specifications or codes shall be rejected forthwith and the contractor shall carry out the rectification at this own cost. Results of all inspection & tests shall be recorded in the inspection reports, test reports, etc., which will be approved by the Engineer-in-charge. These reports shall form part of the completion documents.

   Inspection & Acceptance of works shall not relieve the contractor from any of his responsibilities under this contract.

7. Site Cleaning:
   The contractor shall take care to clean the working site from time to time for easy access to work site and for safety. Working site should be always kept cleared to the entire satisfaction of DAFFPL.

   Before handing over any work to the owner, the contractor in addition to other formalities to be observed as detailed in the document shall clear the site to the entire satisfaction of DAFFPL.

8. Coordination with other Agencies:
   Work shall be carried out in such a manner that the work of other agencies operating at the site is not hampered due to any action of the contractor. Proper coordination with other agencies will be the responsibility of the contractor. In case of any dispute, the decision of

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Engineer-in-charge shall be final and binding on the contractor.

9. DAFFPL reserves the right to accept any tender in whole and reject any or all tenders without assigning any reason. DAFFPL also reserves the right to allow public enterprises (Central/State) Price / purchase /contract / service preference as admissible under the Indian Government Policy.

10. BID PRICES:
    a) Prices shall be furnished strictly in the Price Bid format of the tender document.
    b) Bidder should quote their lowest and best offered price. Prices so quoted will remain firm till satisfactory completion of order. The price will not be subjected to escalation for any reason whatsoever.
    c) Bidders quoted prices shall be deemed to include entire Specification of item and all obligations and responsibilities to be carried out / executed by the Bidder as per terms of tender document. It is clearly understood by the Vendor that it is for the Vendor to ascertain and assess the applicable Acts/ Regulations/ Laws etc., entirely of their own. It is also for the Vendor to ascertain and assess the applicability of taxes, duties, levies etc. In case of any difference of opinion between Vendor's proposal and interpretation by any tax/assessing (or similar) authorities, on the rate or terms and conditions related to taxes and duties etc., owner's liability shall be strictly as per terms/provisions of the contract based on tender document and Vendors offer.
    d) No other charges accept those mentioned in the tender document will be payable to vendor.

11. Materials are required to be dispatched by the vendor to the locations, on freight paid DOOR- DELIVERY CONSIGNEE COPY ATTACHED basis along with copies of Inspection release note & internal test certificates & other documents as mentioned elsewhere in this tender document.

12. Bidder shall quote considering the cost of all approvals, insurances and other applicable charges; nothing shall be paid/reimbursed additionally on any account.

13. Goods & Services Tax (GST): -The tenderer should have valid Goods & Service Tax registration. Tenderer should enclose the copy of the registration (GST) /copy of acknowledgement along with the tender. The Parties without valid Goods & Service Tax number need not quote. As per Section 171 of CGST/SGST Act, "Any reduction in rate of tax on any supply of goods or services or the benefit of input tax credit shall be passed on to the recipient by way of commensurate reduction in

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prices.

14. TAXES & DUTIES:
    a) Bidder(s) quoted prices shall be exclusive of all taxes, duties, cess, levies etc.,
    b) The invoice should clearly mention that applicable Excise Duty, Education Cess or any other taxes charged and paid / payable on quoted item to enable the owner to claim MODVAT / Input credit.
    c) The statutory variation in Excise duty, Education Cess and Sales tax / VAT/GST on finished goods and introduction of new tax, from bid due date till the contractual completion period shall be to owner account against submission of the documentary evidence. However, any increase in the rate of these taxes and duties beyond the contractual delivery period shall be to Seller account. Any decrease in the rate of these taxes and duties shall be passed on to the owner. Any additional excise duty due to increase in turn-over would be to seller account.
    d) It is for the Bidder to assess and ascertain the rate of excise duty, education Cess and sales tax/VAT applicable on quoted items. It is clearly understood that Owner will not have any additional liability towards payment of Excise Duty, Education Cess, GST and Sales Tax/VAT which is based on Bidders wrong assessment / interpretation of applicability of such Excise Duty and/or education cess and / or Sales Tax/VAT.
    e) Successful bidder shall carry out its obligations towards services at site as mentioned in technical specifications without any extra charges.
    f) Octroi/Entry tax, if any, in the any state of India shall be directly paid by the vendor, if applicable.
    g) DAFFPL shall not be liable, in case the tax authorities assess the tax elements in a different way on account of any reason, whatsoever.
    h) Taxes and duties other than those specified in this document, if any, shall be included in the quoted prices and no separate reimbursement shall be made by DAFFPL.

15. Income Tax / Corporate Tax:
    a) As regards Income Tax, Surcharge on Income Tax or any other Corporate Tax payable by the Bidder for reason of the contract awarded, and / or on their expatriate personal, the Owner shall not bear any Tax liability whatsoever, irrespective of the mode of construction of contract / order. The Bidder shall be liable and responsible for payment of such tax, if attracted under the provision of Indian Income Tax Act.
    b) Bidder may note that if any tax is deductible at source as per Indian Income Tax Law, the same will be deducted before releasing any

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payment to the Bidder and a TDS (Tax deducted at source) certificate will be furnished to the Bidder.

c) **Bidder may note that where the responsibility to deduct TDS under section 194Q of Income Tax Act is on DAFFPL, bidder shall not collect any TCS under section 206C(1H) of the Income Tax Act from DAFFPL.**

d) Accordingly, Bidder shall have the responsibility to check and include such provision of taxes in the prices.

e) In case of delay in delivery due to reasons attributable to Bidder, any new or additional taxes or duties levied by Statutory authorities during this period shall be borne by the Bidder.

16. EMD / BID SECURITY

a) The bidder shall furnish, as part of his bid, a bid security in original for the amount specified in the tender document by way of pay order, bank guarantee on Rs.100/-value non-judicial stamp paper or demand draft.

b) The bid security is required to protect the Owner against the risk of Bidders conduct, which would warrant the security forfeiture.

c) If bid Security / EMD is in the form of bank guarantee, it shall be in the form of irrevocable bank guarantee (in the format attached) issued by any Indian Scheduled Bank (other than Co-operative Bank) will be accepted.

d) Bid Security / EMD shall be issued in favour of M/s Delhi Aviation Fuel Facility (P) Limited, New Delhi.

e) Unsuccessful bidders bid security without any interest will be discharged/ returned as promptly as possible, but not later than 60 days after the expiry of the period of bid validity prescribed by the Owner.

f) The successful bidder bid security without any interest will be discharged, upon the Bidder accepting the Contract/ Purchase Order and furnishing the Contract performance bank guarantee to DAFFPL.

g) The bid security may be forfeited:

   i. If a bidder withdraws his bid during the period of bid validity or

   ii. In the case of a successful bidder, if the bidder fails or refuses to:

      - Accept the Purchase Order in accordance with agreed terms and conditions.
      - Furnish Contract performance bank guarantee as per bid document/ Purchase Order.

   iii. Detection of submission of false / forged documents and fraud.

h) Central Public Sector Undertaking of Govt. Of India are exempted

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from furnishing the bid security. Firms registered with NSIC/ MSME are also exempted from furnishing bid security, provided they are registered for the tendered items and up to the monetary limit they intend to quote. Provided further that they submit a copy of the current and valid registration certificate for the quoted item and monetary value along with their bid(s). Owner reserves right to verify the registration certificate provided, with relevant authorities.

17. CONTRACT PERFORMANCE BANK GUARANTEE [CPBG]

a) As a Performance security, the successful Bidder, to whom the work is awarded by, shall be required to furnish within 30 days of notification of award of contract (Letter/ Fax/e-mail of Intent) a Performance Bank Guarantee on RS.100/- VALUE non-judicial stamp paper in favour of the Owner (M/S DAFFPL).
b) The Bank Guarantee amount shall be equal to TEN PERCENT (10%) of the Total Order Value, and it shall guarantee the faithful performance of the Order in accordance with the Terms and conditions specified in the documents and specifications.
c) CPBG shall be in the form of an irrevocable Bank Guarantee (in the format attached) issued by any Indian Scheduled Bank (other than Co-operative Bank).
d) The Bank Guarantee shall be valid for the entire period of the Contract, namely, till the end of the guarantee / warranty period. The guarantee amount shall be payable on demand to the Owner.
e) In case, the Contract Performance Bank Guarantee stated above gets reduced/ deducted for reasons of non-fulfillment of any Contractual obligations upto the completion of guarantee period, the bidder shall immediately take action to increase the value of Bank Guarantee to TEN PERCENT (10%) of the Contract price, to cover his guarantee/warranty obligations.
f) The Performance Guarantee will be returned to the bidder without any interest at the end of the warranty / guarantee period subject to fulfillment of all contractual obligations by the Bidder. The bank guarantee shall have a claim period of 06 months beyond the contractual guarantee period.
g) The proceeds of performance security shall be appropriated by the owner as compensation for any loss resulting from vendor's failure to complete his obligations under the contract to the prejudice to any of the rights or remedies the owner may be entitled to as per terms and conditions of contract. The proceeds of this performance security shall also govern the successful performance of goods and services and vendors all obligations during the entire period of contractual warrantee / guarantee.

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18. PRICE REDUCTION FOR DELAY IN DELIVERY/WORK COMPLETION:

The inability of successful bidder to execute orders in accordance with the agreed completion schedule will entitle DAFFPL, at its options, to:

a) Accept delayed work completion at prices reduced by a sum equivalent to half percent (0.5%) of the total order value (i.e. sum of amount of purchase order for supply part and amount of work order for installation part) of work for every week of delay or part thereof which is to be considered as a week, limited to a maximum of 10% of the total order value (sum of supply part value and installation part value). Date of completion of all works at DAFFPL site shall be considered for calculation of price reduction.

19. Purchase order for supply part will be placed by DAFFPL and work order for installation part will be placed by fuel farm operator M/s IOSPL on behalf of DAFFPL. The billing by contractor shall be done on DAFFPL only on both the cases.

20. INSURANCE

Contactor shall carry and maintain any and all statutory insurance(s) required under Indian Laws and Regulations, including Workmen compensation Act/ESI/Third party liabilities etc. and insurances for their personnel engaged in performance of the work at their own cost.

TRANSIT & COMPREHENSIVE INSURANCE

The vendor shall arrange transit Insurance for door delivery of equipments to DAFFPL Fuel Farm, New Delhi for delivery.

21. INSPECTION:

a) Material / construction/Fabrication shall be inspected by owner or its representative. Charges other than third party inspection, is entirely vendor responsibility and in no way should affect the completion schedule.

b) OWNER may, at its own expense, witness any test or inspection. In order to enable OWNER to witness the tests/inspections OWNER will advise the bidder in advance whether it intends to be present at any of the inspections.

c) Even if the inspection and tests are fully carried out, the Vendor shall not be absolved from its responsibilities to ensure that the Material(s), raw materials, components and other inputs are supplied strictly to conform and comply with all the requirements of the Contract at all stages, whether during manufacture and fabrication, or at the time of Delivery as on arrival at site and after its

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commissioning or start up and during the defect liability period. The inspections and tests are merely intended to prima-facie satisfy OWNER that the Material(s) and the parts and components comply with the requirements of the Contract. The Vendor s responsibility shall also not be anywise reduced or discharged because OWNER or OWNER s representative(s) or Inspector(s) shall have examined, commented on the Vendor s drawings or specifications or shall have witnessed the tests or required any chemical or physical or other tests or shall have stamped or approved or certified any Material(s).

d) Although material approved by the Inspector(s), if on testing and inspection after receipt of the Material(s) at the location, any Material(s) are found not to be in strict conformity with the contractual requirements or specifications, OWNER shall have the right to reject the same and hold the Vendor liable for non-performance of the Contract.

22. GUARANTEE/WARRANTY:

a) Materials/workmanship shall be guaranteed against manufacturing defects, materials, workmanship, and design for a period of 12 months from the date of completion of work at DAFFPL site. Warranty for replacement of material / accessories should be provided free of charges at our premises. The above guarantee/warranty will be without prejudice to the certificate of inspection or material receipt note issued by us in respect of the materials.

b) All the materials including components and subcontracted items should be guaranteed by the vendor within the warranty period mentioned above. In the event of any defect in the material, the vendor will replace / repair the material at DAFFPL concerned location at vendor risk and cost on due notice.

c) Alternatively, DAFFPL reserves the right to have the material repaired / replaced at the locations concerned, at the vendors risk, cost and responsibility, in case, vendor does not replace / repair the material.

d) The Vendor shall provide similar warrantee on the parts, components, fittings, accessories etc. so repaired and / or replaced.

e) Vendor shall guarantee that the performance of the EQUIPMENT/MAT supplied under the CONTRACT shall be strictly in conformity with the specifications and shall perform the duties specified under the CONTRACT.

f) RISK PURCHASE CLAUSE: We reserve the right to curtail or cancel the order either in full or part thereof if bidder fails to comply with delivery schedule and other terms & conditions of the order. DAFFPL also reserves the right to procure same or similar materials/equipment through other sources at vendor's entire risk,

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cost and consequences.

23. TEST & PERFORMANCE CERTIFICATES: Bidder shall furnish Material test and Performance Certificates for the materials along with the challans and invoice.

24. Construction power, water, loading and boarding, Site Storage with watch and ward, receipt, unloading, shifting material to store and internal shifting to site shall be included in Vendor's scope.

25. The unit rates as quoted to arrive at a total price shall be firm and inclusive of all duties, levies, transportation etc. No separate payment shall be made for site mobilization / demobilization, insurance etc.

26. The Schedule of Rates should be read with all other sections of the tender documents.

27. The tenderer shall be deemed to have studied the drawings, specifications and the details of work to be done within the time schedule and to have acquainted with the conditions prevailing at site. Site visit is strongly recommended.

28. All supply and work shall be in line with tender specifications, drawings and instructions of the Engineer-in-Charge.

29. The quantities shown against the various items are only indicative of the quantum of work and it may vary to any extent. Billing/payment will be done as per payment terms. Vendor to make measurements at site before dispatch of any material.
30. The rate quoted shall be inclusive of all work as mentioned in the scope of work in tender documents.

31. In case of any rework due to faulty workmanship or any defects occur or modifications are required no extra claims for such works/supply shall be entertained.

32. PAYMENT TERMS: The payment will be made after making necessary deductions as applicable & stipulated elsewhere in the tender

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document for materials, security deposit or any moneys due to the Owner etc. Works have to executed as per drawings & scope of work.

- Contractor should submit PBG equal to 10% of Total Order Value with in 30 days of issue of LOI/PO.
- If PBG is not submitted by contactor then 10% amount shall be deducted from running bills of contractor as retention amount.
- PBG/retention amount will be released after completion of guarantee/warranty/defect liability period.
- Payment will be released within 30 days from the receipt and acceptance of Invoice along with all required documents.
- Payments shall be done on the basis of following milestone, however for records purpose the contractor will have to submit the "indicative bill of quantities" containing all information's such as total quantity, quantity consumed etc. against all line items along with supporting gate passes & measurement sheet verified by PMC/Owner etc.
- Notwithstanding any other clause of the tender documents, payment for Goods and Service Tax amount claimed in the invoice for work done by the successful bidder will be released only after the invoice is reflected in GSTR-2A of DAFFPL/Owner

The following payment terms shall be applicable:

S. No.	Payment Terms
1	10% of Purchase Order & Work Order Value - Against Completion of Ring Wall & Tank Pad Foundation Complete in all Respect.
2	15% of Purchase Order & Work Order Value - Against Completion of PCC Flooring, Completion of Dyke Wall, Drain work inside Dyke wall, circular drain around tank and Connection to existing OWS Pit (Includes completion of construction of New Collection Pits outside Dyke Area) Completion of Dyke Wall Includes Painting and completion of Fire wall
3	05% of Purchase Order & Work Order Value - Against Prefabrication work & Erection of Tank Bottom Plates including Soil side painting of Tank Bottom Plates
4	20% of Purchase Order & Work Order Value - Against Prefabrication work & Erection of Tank Roof Plate, and Top 2 Shells including Roof Structure works, Final Paint for Roof Internal including paint of Structure, Handrail at Roof, Roof Nozzles, Foam Platform etc.
5	15% of Purchase Order & Work Order Value - Against Completion of all shell lifting and removal of Jacks, Completion of welding and necessary testing of Shell to Annular Plate Joint, Shell Nozzles etc. Ready for Tank Hydro test.

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6	15% of Purchase Order & Work Order Value - Against Hydro test, Tank Cleaning, Internal Painting, External Painting including Hand rail, staircase, Foam Platform etc., Calibration of Tank & Installation of Floating Suction.
7	10% of Purchase Order & Work Order Value - Against completion of Piping Work & associated works (Product Pipeline & Fire Water & Foam) as per Tender Document including Tie In with Existing System
8	10% of Purchase Order & Work Order Value - Against Overall completion of the work in all respect and handover of complete Tank and along with issuance of work completion certificate from Client / Owner.

Note: No Mobilization advance will be paid against the purchase/work order issued against the subject tender.

Arrangement for Transit e-way Bill under the GST Act for all the purchases is the responsibility of the tenderer.

33. Only in the event of causes of Force Majeure occurring within the contractual delivery period and if they impede the performance of contract, the delivery dates shall be extended on receipt of application from the bidder / Owner without imposition of penalty. Only those causes which depend on natural calamities, civil wars, fire and national strikes which have duration of more than seven consecutive calendar days are considered the causes of force Majeure. The decision of Owner shall be final and binding on vendor.

34. The Vendor must advise the Owner by a registered letter duly certified by Local Chamber of Commerce or statutory authorities and Owner must advise the Vendor by a letter, the beginning and the end of the delay immediately, but in no case later than within 10 days of the beginning and end of such causes of Force Majeure condition as defined above. Provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for period exceeding 60 days either party may at its option terminate the contract.

35. Repeat Order: DAFFPL reserves the right to place repeat order up to the order quantity within One Year from the date of original order on mutual agreement basis.

36. Any reference to the Govt. Acts /Regulations etc. in the Bid Document is

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only indicative, and it is entirely for the bidder to ascertain the applicable Acts/Regulations.

37. RECOVERY OF SUMS DUE: Whenever, any claim against bidder for payment of a sum of money arises out of or under the contract or in any other form, the owner shall be entitled to recover such sums from any sum then due or when at any time thereafter may become due from the vendor under this or any other form and should this sum be not sufficient to cover the recoverable amount of claim(s), the vendor shall pay to DAFFPL on demand the balance remaining due.

38. PATENTS & ROYALTIES: The vendor shall fully indemnify owner and users of materials specified herein/supplied at all times, against any action, claim or demand, costs and expenses, arising from or incurred by reasons of any infringement or alleged infringement of any patent, registered design, trademark or name, copy right or any other protected rights in respect of any materials supplied or any arrangement, system or method of using, fixing or working used by the vendor. In the event of any claim or demand being made or action sought against Owner in respect of any of the aforesaid matter, the vendor shall be notified thereof immediately and the vendor shall at his/its own expense with (if necessary) the assistance of Owner (whose all expense shall be reimbursed by the vendor) conduct all negotiations for the settlement of the same and/or litigation which may arise thereof.

39. LIABILITY CLAUSE: In case where it is necessary for employees or representatives of the Vendor to go upon the premises of owner, vendor agrees to assume the responsibility for the proper conduct of such employees/representatives while on said premises and to comply with all applicable Workmen Compensation Law and other applicable Government Regulations and Ordinances and all plant rules and regulations particularly in regard to safety precautions and fire hazards. If this order requires vendor to furnish labour at site, such vendors workmen or employees shall under NO circumstances be deemed to be in owner s employment and vendor shall hold himself responsible for any claim or claims which they or their heirs, dependent or personal representatives, may have or make, for damages or compensation for anything done or committed to be done, in the course of carrying out the work covered by the purchase order, whether arising at owner s premises or elsewhere and agrees to indemnify the owner against any such claims, if made against the owner and all costs of proceedings, suit or actions which owner may incur or sustain in respect of the same.

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40. COMPLIANCE OF REGULATIONS: Vendor warrants that all goods/Materials covered by this order have been produced, sold, dispatched, delivered and furnished in strict compliance with all applicable laws, regulations, labour agreement, working condition and technical codes and statutory requirements as applicable from time to time. The vendor shall ensure compliance with the above and shall indemnify owner against any actions, damages, costs and expenses of any failure to comply as aforesaid.

41. REJECTION, REMOVAL OF REJECTED GOODS AND REPLACEMENT: In case the testing and inspection at any stage by inspectors reveal that the equipment, materials and workmanship do not comply with specification and requirements, the same shall be removed by the vendor at his/its own expense and risk, within the time allowed by the owner/purchaser. The Purchaser shall be at liberty to dispose off such rejected goods in such manner as he may think appropriate, in the event the vendor fails to remove the rejected goods within the period as aforesaid. All expenses incurred by the Purchaser for such disposal shall be to the account of the vendor. The freight paid by the purchaser, if any, on the inward journey of the rejected materials shall be reimbursed by the vendor to the purchaser before the rejected materials are removed by the vendor. The vendor will have to proceed with the replacement of the Equipments without claiming any extra payment if so required by the purchaser. The time taken for replacement in such event will not be added to the contractual delivery period.

42. NON-WAIVER : Failure of the Owner to insist upon any of the terms or conditions incorporated in the Purchase Order or failure or delay to exercise any rights or remedies herein, or by law or failure to properly notify Vendor in the event of breach, or the acceptance of or payment of any goods hereunder or approval of design shall not release the Vendor and shall not be deemed a waiver of any right of the Owner to insist upon the strict performance thereof or of any of its or their rights or remedies as to any such goods regardless of when such goods are shipped, received or accepted nor shall any purported oral modification or revision of the order by DAFFPL act as waiver of the terms hereof. Any waiver to be effective must be in writing. Any lone incident of waiver of the any condition of this agreement by DAFFPL shall not be considered as a continuous waiver or waiver for other condition by DAFFPL.

43. NEW & UNUSED MATERIAL: All the material supplied/used by the vendor shall be branded new, unused and of recent manufacture.

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44. CANCELLATION:
    a) DAFFPL reserves the right to cancel the contract/purchase order or any part thereof through a written notice to the vendor if –
        i. The vendor fails to comply with the terms of this purchase order/contract.
        ii. The vendor becomes bankrupt or goes into liquidation.
        iii. The vendor fails to deliver the goods on time and/or replace the rejected goods promptly.
        iv. The vendor makes a general assignment for the benefit of creditors.
        v. A receiver is appointed for any of the property owned by the vendor.
        vi. Any other conditions where owners commercial interest get affected.
    b) Upon receipt of the said cancellation notice, the vendor shall discontinue all work on the purchase order matters connected with it. DAFFPL in that event will be entitled to procure the requirement in the open market and recover excess payment over the vendor s agreed price if any, from the vendor and also reserving to itself the right to forfeit the security deposit if any, made by the vendor against the contract. The vendor is aware that the said goods are required by DAFFPL for the ultimate purpose of materials production and that non-delivery may cause loss of production and consequently loss of profit to the DAFFPL. In this-event of DAFFPL exercising the option to claim damages for non delivery other than by way of difference between the market price and the contract price, the vendor shall pay to DAFFPL, fair compensation to be agreed upon between DAFFPL and the vendor. The provision of this clause shall not prejudice the right of DAFFPL from invoking the provisions of price reduction clause mentioned aforesaid.

45. ANTI –COMPETITIVE AGREEMENTS/ABUSE OF DOMINANT POSITION: The Competition Act, 2002 as amended by the Competition (Amendment) Act, 2007 (the Act), prohibits anti- competitive laws and aims at fostering competition and at protecting Indian markets against anti- competitive practices by enterprises. The Act prohibits anti- competitive agreements, abuse of dominant position by enterprises, and regulates combinations (consisting of acquisition, acquiring of control and M&A) wherever such agreements, abuse or combination causes, or is likely to cause, appreciable adverse effect on competition in markets in India. DAFFPL reserves the right to approach the Competition Commission established under the Act of Parliament and file information relating to anti-competitive agreements and abuse of dominant position. If such a situation arises, then Vendors are bound by the decision of the Competitive Commission and also subject to penalty and other provisions

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of the Competition Act.

46. ASSIGNMENT: The Vendor can / does not have any right to assign his rights and obligations under these general purchase conditions without the prior written approval of DAFFPL.

47. GOVERNING LAW: These General Purchase Conditions shall be governed by the Laws of India.

48. AMENDMENT: Any amendment to these General Purchase Conditions can be made only in writing and with the mutual consent of the parties to these conditions.

49. The following expressions used in these terms and conditions and in the purchase order shall have the meaning indicated against each of these:
    a) **OWNER,** Client, Purchaser, buyer means DAFFPL
    b) **VENDOR**, tenderer, Bidder, Contractor, Seller, Supplier, manufacturer stated anywhere in the tender document carry the same meaning: It means the person, firm or the Company / Corporation to bidding and shall include its successors and assigns.
    c) **INSPECTOR/ TPIA:** Person/agency deputed by Owner for carrying out inspection, checking/testing of items ordered and for certifying the items conforming to the purchase order specifications.
    d) **GOODS / MATERIALS:** means any of the articles, materials, machinery, equipment's, supplies, drawing, data and other property and all services including but not limited to design, delivery, installation, inspection, testing and commissioning specified or required to complete the order.
    e) **SITE / LOCATION:** means any Site where DAFFPL desires to receive materials anywhere in India as mentioned in tender.
    f) **CONTRACT**, Order or Purchase Order/CALL-OFF means the agreement for supply of goods/ materials for required quantity between Owner and Vendor, for a fixed time on mutually agreed terms and conditions.
    g) The term MR means Material Requisition containing technical requirements and scope of work (technical), GPC means General Purchase Conditions containing commercial terms & conditions, PO means Purchase order issued after award of contract incorporating agreed deviations in MR, ATC means Agreed Terms & Conditions, RFQ means Request For Quotation.
    h) For the purpose of contract, the trade terms FOB, CFR and CIF, DAP shall have the meanings as assigned to them by INCOTERMS 2010 published by ICC, Paris.

50. REFERENCE FOR DOCUMENTATION:

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The number and date of Collective Request for Quotation (CRFQ) must appear on all correspondence before finalization of Contract / Purchase Order.

After finalization of Contract / Purchase Order: The number and date of Contract /Purchase Order must appear on all correspondence, drawings, invoices, dispatch advice, (including shipping documents if applicable) packing list and on any documents or papers connected with this order.

51. ARBITRATION

a) Any 'dispute or difference of any nature whatsoever, any claim, cross-claim, counterclaim or set off of the Owner against the Consultant or regarding any right, liability, act, omission or account of any of the parties hereto arising out of or in relation to this agreement shall be referred to the Sole Arbitration of the nominated Director of the Owner or of some Officer of the Owner who may be nominated by the nominated Director. The consultant will not be entitled to raise any objection to any such arbitrator on the ground that the arbitrator is an officer of the Owner or that he has dealt with the matters to which the contract relates or that in the course of his duties as an Officer of the Owner, he had expressed view on all or any other matters in dispute or difference. In the event of the arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, the nominated Director as aforesaid at the time of such transfer, vacation of office or inability to act may in the discretion of the nominated Director designate another person to act as arbitrator in accordance with the terms of the agreement to the end and intent that the original Arbitrator shall be entitled to continue the arbitration proceedings notwithstanding his transfer or vacation of office as an officer of the Owner if the nominated Director does not designate another person to act as arbitrator on such transfer, vacation of office or inability of original arbitrator. Such person shall be entitled to proceed with the reference from the point at which it was left by his predecessor. It is also a term of this contract that no person other than the nominated Director of the Owner or a person nominated by such nominated Director as aforesaid shall act as arbitrator hereunder. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to the agreement subject to the provisions of the Arbitration & Conciliation Act,1996 or any statutory modification or reenactment thereof and the rules made there under for the time being in force shall apply to the arbitration proceedings under this clause.

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b) The arbitrator shall have power to order and direct either of the parties to abide by, observe and perform all such directions as the arbitrator may think fit having regard to the matters in difference i.e. dispute, before him. The arbitrator shall have all summary powers and may take such evidence oral and/or documentary, as the arbitrator in his absolute discretion thinks fit and shall be entitled to exercise all powers under the Indian Arbitration & Conciliation Act 1996 including admission of any affidavit as evidence concerning the matter in difference i.e. dispute before him.

c) The parties against whom the arbitration proceedings have been initiated, that is to say, the Respondents in the proceeding, shall be entitled to prefer a cross claim, counter claim or set off before the Arbitrator in respect of any matter in issue arising out of or in relation to the Agreement without seeking a formal reference of arbitration to the nominated Director/officer for such counter-claim, or set off and the Arbitrator shall be entitled to consider and deal with the same as if the matters arising therefore has been referred to him originally and deemed to form part of the reference made by the nominated Director/officer.

d) The arbitrator shall be at liberty to appoint, if necessary, any accountant or engineering or other technical person to assist him, and to act by the opinion so taken.

e) The arbitrator shall have power to make one or more awards whether interim or otherwise in respect of the dispute and difference and in particular will be entitled to make separate awards in respect of claims of cross claims of the parties.

f) The arbitrator shall be entitled to direct any one of parties to pay the costs to the other party in such manner and to such extent as the arbitrator may in his discretion determine and shall also be entitled to require one or both the parties to deposit funds in such proportion to meet the arbitrators expenses whenever called upon to do so.

g) The parties hereby agree that the courts in the city of Delhi alone shall have jurisdiction to entertain any application or other proceedings in respect of anything arising under this agreement and any award or awards made by the Sole Arbitration hereunder shall be filed (if so required) in the concerned courts in the city of Delhi only.

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SCOPE OF WORK
EPC works of 9000 KL Aboveground ATF Storage Tank at DAFFPL Fuel Farm

Rev	Date	Description	Prepared	Reviewed	Approved	Client Review
1	04-06-2022	Issued for Tender	DR	AP	SKJ	
0	07-05-2022	Issued for Tender	DR	AP	SKJ	

Contents

SCOPE OF PROJECT

1.0 Introduction

Delhi Aviation Fuel Facility Private Limited (DAFFPL) is a Joint Venture comprising Indian Oil Corporation Ltd. (IOCL), Bharat Petroleum Corporation Ltd. (BPCL), and Delhi International Airport (P.) Ltd. (DIAL). DAFFPL provides the infrastructure aimed at ensuring an uninterrupted flow of Aviation Turbine Fuel (ATF) to all type of aircrafts at the Indira Gandhi International Airport, New Delhi (IGI Airport) as per international benchmarking.

To ensure increased demand, DAFFPL is augmenting the ATF storage Facility by adding additional ATF storage tank having capacity 9000 KL in existing Tank Farm area.

2.0 Purpose of Document:

The purpose of this document is to cover the Scope of Work involved in Design Engineering, Procurement, Fabrication and Erection of New ATF storage Tank at DAFFPL Fuel Farm including fabrication, installation of Piping, Valves, Electrical and Instrumentation works complete in all respect.

2.1 The primary objectives of this project shall be;

- Expansion of existing Infrastructure for Aviation Fuel Storage and accordingly upgrade the associated infrastructure for product receipt, delivery and other requirements to ensure the efficient operation of the entire storage and distribution system.
- Upgrade some of the existing systems as described in scope of works.
- Integrating the entire new installation with existing installation including hardware and software integration.

DAFFPL intends to appoint a contractor for construction of new storage tank (1 No. namely VF 207) for which scope shall include design, engineering, procurement and construction of all elements necessary to complete the works and further inspection, testing and commissioning of the works as detailed further in these documents and generally set the facility to work.

3.0 Scope of Work:

3.1 General requirements:

3.1.1 The scope of work given herein describes the requirements and guidelines to the Contractor for the Additional storage tank Project, including but not limited to design, engineering, HAZOP study, Quantitative Risk Analysis, soil investigation, procurement, fabrication, erection, installation, testing, cleaning of the complete above ground storage ATF tank (VF 207) in existing tank farm area, fabrication, erection, installation, testing of Tank Body Nozzle and Reinforcement Pad & providing, electrical works, PLC integration with existing PLC/automation system, Floating Suction works, commissioning assistance etc. complete in all respect.

3.1.2 The Contractor is expected to visit the site to get himself acquainted with prevailing site conditions i.e. availability of storage/stacking space, water, power, approach road, pipeline routing, security and safety requirements for working inside DAFFPL Fuel Farm etc., before quoting for this tender. The Contractor shall be entirely responsible for provision of all such utilities. No delay or cost shall be entertained on this account.

3.1.3 The Contractor shall be provided power connection at One Point from DAFFPL at his cost. Contractor to arrange necessary Distribution Junction boxes along with cabling at work site at his own cost.

3.1.4 Drawings accompanying the tender document are indicative and issued for tendering purpose only. Detailed alignment drawings, shell cutting schedule, foundation drawings, roof drawings, measurements, section drawings, all detailed tank drawings, apprentices and any specific drawing required for construction shall be developed by the contractor before start of the work and the same shall get approved by DAFFPL. Contractor shall carry out the work on the basis of Approved Good for Construction drawings only. HAZOP involving all stakeholders shall be conducted by the contractor at his costs before undertaking any construction activity at fuel farm.

3.1.5 Bill of Quantity accompanying the tender document is indicative and issued for tendering purpose only to get the estimated cost by the Bidder. Bidder shall execute the works in entirety within quoted cost. No extra payment shall be entitled to the Contractor whatsoever reason if quantities of Bill of quantity mentioned in the tender document. Contractor shall execute the work on the basis of Approved Good for Construction drawings and price quoted shall remain fixed.

3.1.6 On completion of the work Contractor shall prepare and submit As-built drawings to DAFFPL.

3.1.7 No deviations/exceptions from this scope of work shall be permitted. A complete list of exclusions/deviations from the Contractor's scope of work shall be clearly indicated in the offer.

3.1.8 The bidders are required to note that the contract shall be awarded and the works shall be executed on a lump sum price basis and not on unit rate basis and the unit rates (to be submitted by the successful bidder) in the bill of quantities which have been tabulated only for the purpose of providing the basis of deriving the lump sum price.

3.1.9 Bidders must note that the bill of quantities is solely for guidance purposes. The successful bidder shall also give a breakdown and details of such prices vis-à-vis each of the cost centre/items as itemized in the Bill of Quantity/Schedule of Prices. A fully filled Indicative Bill of Quantities to arrive at the total lump-sump cost shall be submitted by successful bidder prior to award of contract.

3.1.10 The Contractor shall take care for easy access to work site and for safety. Working site should be always kept clean to the entire satisfaction of the Engineer-in-Charge of DAFFPL.

3.1.11 The civil works required for Tank construction i.e. Tank foundation as per API 650, & tank fabrication as per API 650, pipe laying i.e. excavation, sand bed, backfilling and construction of RCC Ring wall / footing, RCC Platform, Channel Drain, Access Platform, Working Platform or any other work etc. will be carried out by Contractor as a part of the Scope of work.

3.1.12 The Contractor shall carry out the installation work as per the phasing plan approved by DAFFPL. The approved phasing plan may change during the course of construction if required by DAFFPL/ Fuel Farm Operations team.

3.1.13 Any enabling work related to Civil, mechanical, Fire Protection, electrical, instrumentation work, such as temporary working platform, temporary supports etc., required for accomplishment of the scope of this work shall be deemed to be included in the scope of the Contractor.

3.1.14 Contractor shall be responsible for installation of all temporary cabling and connections to enable temporary lighting necessary for completion of his scope of work.

3.1.15 Contractor shall be responsible for the required coordination with DAFFPL and Fuel Farm Operator for working inside operational Fuel Farm and Dyke wall. Area which are categorized under PESO Licensed area.

3.1.16 Necessary care shall be taken by the Contractor to ensure the safe, uninterrupted and convenient operation of DAFFPL Fuel Farm and motor vehicles inside Fuel Farm including but not limited to signage, markings, lighting, existing utilities inside fuel farm or any other works.

3.1.17 When the work is completed, it shall be fit for the purpose for which the works are intended and meet the relevant technical and other specifications as specified or as may be inferred from the Contract, Project Documents and other specifications that may be agreed upon.

3.1.18 The Contract documents define only the design intent and general performance requirements. The entire work shall be carried out strictly in accordance with the true intent and meaning of the specification and drawings taken together regardless of whether the same may or may not be shown particularly on the drawings or described in the specification.

3.1.19 There may be more than one Contractor working in the area at the same time. The work has to be carried out in proper co-ordination and consultation with the DAFFPL and all other parties concerned with the work.

3.1.20 Work restrictions, delays, or conflicts that should be worked around for the various scope extents shall be coordinated and are inherent to this scope of work and schedule.

3.1.21 Access to the site will be limited as per the requirements for construction of projects and also limited by Fuel Farm operational restrictions. Contractor is required to be aware of these restrictions and ensure that he has accounted for them in submission of their schedule and proposal.

3.1.22 Contractor shall submit Quality Assurance Plan (QAP), additional detailed and arrangement drawings for approval by DAFFPL. All works to be carried out as per the approved QAP, approved Technical specifications and Good for Construction Drawings.

3.1.23 The works shall be carried out as per the Fuel Farm Operational clearances and work permits (Daily/ Weekly) for the subject area.

3.1.24 It will be overall responsibility of Contractor to ensure safety of the installation being executed by him. Any damage caused to the installations due to the poor workmanship, defective work and damage due to negligence shall be made good by Contractor at his own cost without any financial implication to DAFFPL.

3.1 Work Tendered

Work tendered as a part of this scope shall include the following:

3.2.1 Soil Investigation Survey will have to be carried out by the contractor. Based on same, all drawings shall be prepared.

3.2.2 Area Grading and Earthwork for new tanks.

3.2.3 Designing & Preparation of good for construction drawings abiding all guidelines. All pre-requisites for preparation of GFC for these scope of works such as soil investigation report, gpr survey etc are in contractor's scope.

3.2.4 Construction of tanks shall be carried out by abiding all OISD, PESO, Petroleum 2002 rules, PNGRB & other applicable statutory guidelines/rules/etc. Tank shall be based on API 650.

3.2.5 Design Engineering and construction of RCC Pipe Pedestal Supports, RCC/ Block masonry, RCC Duct Banks (Electrical and Instrumentation), Tank Pad Foundations as per API 650, Earth Pits, Storm water Drain for the Fuel Farm area, Drain Chambers including its covers, Electrical / Instrumentation Cable Pull Pits along with its Cover, Hume Pipe drains, PCC and RCC works for Dyke Wall, Area Pavement inside dyke wall, floating suctions etc complete in all respect.

3.2.6 Design Engineering, Supply and Installation / Erection of structural steel for supports, ATF Storage Tank (VF 207) Plate material, structural steel for Tankage works (VF 207), Fabrication, Erection Testing and commissioning of Above Ground Storage tank (VF 207), Tank Nozzles, Tank Valves, Tank instruments, Piping Instruments, Piping Valves all sizes and types, Sampling Units, Flanges, Pipes, Fast Flusher etc. complete in all respect. Contractor to assess the existing available piping system & nozzles on VF205 & VF206 and replicate the same as bare minimum for this tank. (Only 2 Inlets i.e. on of 10'' & one of 16'' in case of VF207)

3.2.7 Construction of RCC Duct Bank (Electrical and Instrumentation), Cable Pull Pits, Junction Boxes Foundations, Earthing Pits including its cover, support foundations etc. complete in all respect.

3.2.8 Carrying out all necessary blasting and Painting works for Storage Tank, Piping, Structural steel for Tank and supports etc. complete in all respect including supply of Grit material, consumables, Paints etc.

3.2.9 Design Engineering, Supply and Installation of Fire Hydrant including Hose Reel Boxes, Sprinkler System for ATF Tank, Fire extinguishers, Foam System etc. complete in all respects for Fuel Farm. Contractor to assess the existing available fire protection system on VF205 & VF206 & replicate the same as bare minimum for this tank.

3.2.10 All nozles at VF205 & VF206 to be replicated. (Only 2 Inlets i.e. on of 10'' & one of 16'' in case of VF207)

3.2.11 All client supplied items (ROSOVs, MOVs, Check Valves/NRVs, Bellows, etc.) shall be installed by the contractor in complete respect including foundation or any other works required for successful commissioning, interfacing & integration with existing system. This is deemed to be part of the scope of works & no extra payment can be claimed on this account.

3.2.12 Miscellaneous works in order to integrate and commissioning the New tank with existing Tank farm etc. as per Owner/ Client requirement.

3.2.13 HAZOP Study and QRA for Construction of Additional Storage Tank and interconnecting Piping, Firefighting system inside Existing Operational Dyke wall.

3.2.14 Third Party Inspection and certification for the Tankage and Piping Job shall be in the scope of the Contractor/Bidder.

3.2.15 In case any activity / item though not specifically covered here in bill of quantities description but same is covered under Scope of Work / Specifications / Drawings, it is understood that the Contractor shall perform such works as mentioned without any time and cost implications.

3.2.16 Any other works not specifically mentioned / listed herein but are required to complete the Additional ATF storage Tank (VF 207) and its integration with existing Tank Farm.

3.2 Employers Requirement

3.3.1 General Design Criteria

3.3.3.1 The installed facility shall receive, store and deliver Aviation Turbine Fuel (Jet A-1) to existing fuel hydrant system for fueling the aircraft at Indira Gandhi International Airport at Palam, New Delhi.

3.3.3.2 The Contractor shall complete the facility in all respects in a manner such that, it is efficiently usable by the Employer / Owner. Contractor shall work with Owner's / employer's representative in close coordination to enable the facility to be commissioned as per the requirements.

3.3.3.3 The new installation shall be provided in compliance with the requirements and practices as prescribed in the codes, standards and as per the standard practices in the aviation fuel- industry. The ICAO manual Doc 9977, Manual on Civil Aviation Jet Fuel Supply informs about the most relevant requirements and standards.

3.3.3.4 All installations related to fuel handling shall be constructed in accordance with national standards and regulations, the latest edition of El Recommended practice 7540 and relevant standards and guidelines.

3.3.3.5 Specific demands/requirements from the company that will operate the plant and hydrant shall be considered. Any deviations from recommendations given in the standards and guidelines shall be approved by the concerned authorities and the employer / Owner.

3.3.3.6 A risk assessment for the plant and relevant installations shall be prepared and a HAZID, HAZOP and QRA shall be performed for all Construction operations including Testing and commissioning of the additional Tank and allied Piping works.

3.3.3.7 This specification outlines preliminary assumptions for the ATF storage systems along with necessary fire and foam protection system, necessary Electrical and Instrumentation works and outlines minimum technical requirements to be followed in the further development of the systems. The contractor shall assume full responsibility for the development of design for installations and the execution of the same.

3.3.2 Regulations and Standards

3.3.2.1 The list of regulations and standards provided in this document may not be complete and exhaustive. It is responsibility of the contractor to comply with all relevant latest regulations and standards prescribed for Aviation fuel storage and distribution systems.

3.3.2.2 The Contractor shall be experienced in the design, construction and operation of fuel facilities and to know of or seek the correct Indian or international standards for the topics not covered below, for example omitted standards from a diverse series of topics such road construction, buildings, civil engineering, electrical engineering, truck turning circles to lightning protection. If contractor does not have experience in some of these topics, shall hire a reputed associate to help support him on these topics. The list of such associate shall be submitted along with the bid submission. DAFFPL shall approve such associate at their discretion.

3.3.2.3 The following is the list of regulations & Standards for aviation fuel, piping, tanking and operating standards and methods (Code requirements). All standards and similar documents shall be latest edition as on the date of tender submission.

- Local Legislations, Standards and Practices (Govt. of India)
- JIG 1 — (Joint Inspection Group] Guidelines for Aviation Fuel Quality Control & Operating Procedures for Joint Into-Plane Fuelling Services
- JIG2 — [Joint Inspection Group] Guidelines for Aviation Fuel Quality Control & Operating Procedures for Joint Airport Depots
- El/JIG Standard 1530 Quality assurance requirements for the manufacture, storage and distribution of aviation fuel to airports
- Civil Aviation Requirements — Section 2 — Airworthiness — Series 'H', Part II — Subject: Aircraft Fuelling procedures Issue II: 2015 and Part III - Aviation fuel at airport - Storage, handling and quality control Issue II: 2015
- The Petroleum Act, 1934
- The Petroleum Rules, 2002
- The Factories Act, 1948
- The Electricity Act, 2003

- No.J-16011/4/2003-lA.III Government of India Ministry of Environment & Forests
- OISD (Oil Industry Safety Directorate) guidelines 117 - Fire Protection facilities for Petroleum Depots
- OISD (Oil Industry Safety Directorate) guidelines 118 — Layouts for Oil and Gas Installations
- OISD (Oil Industry Safety Directorate) guidelines 235 — Storage, Handling, Refuelling and Fire Fighting at Aviation Fuelling Station
- Fuel tank design and construction to API 650 (& BS 2654).
- Tank operation, inspection and maintenance to API 653
- Product piping to ASME B31.3. Welding to API 1104 or ASME Section IX
- All relevant Bureau of Indian Standard / British Standards/ ASTM codes
- Any other applicable codes & standards for the proposed works

4.0 Specific Requirement of Work

The scope of work shall include but not limited to following:

4.1 Designing, planning, procuring, integration, testing & commissioning of the proposed additional one no. fuel storage tank (VF 207) & associated works as defined in this document.

4.2 The works will be carried out in operational Dyke area and Contractor to submit detailed Construction programme, scheduling including phasing of works, safety procedures as per DAFFPL requirement

4.3 Co-ordination, Co-operation & interface management with all Stakeholders (including but not limited to DAFFPL, Fuel farm operator, Instrumentation Control Agency, fuel companies, consultant and regulatory authorities)

4.4 Overall technical responsibility for all required aspects for constructing 1 No. aviation turbine fuel storage tank of 24 m Dia. x 20 m high meeting parameters outlined in this document. The tanks layout shall be as per the attached site layout of the Fuel farm.

4.5 Engineering of equipment, structure, civil infrastructure, electrical system, fire protection system, control system, SCADA automation system and incorporation of all suppliers and subcontractor information into the fuel storage system design. Procurement of all equipment and material. Risk assessment and HAZOP. Quality Assurance Plan and Inspection and Test Plan.

4.6 Assist to Employer / Owner in acquiring Pre and Post approvals / clearances and no objection certificate (NOC) for start of operation from Petroleum & Explosives Safety Organization (PESO) and any other authorities as may be required.

4.7 Integration of new storage facility with existing storage facility including any up gradation required in automation hardware and software.

4.8 Construction, installation and testing of complete fuel storage tank facility. Testing and Inspection shall confirm to API 650 for tanks and El 1540 for product system. All tests as per recognized national or international standards, including but not limited to Diesel Test, Roof Pressure Test, Hydrostatic test and Bottom Vacuum Test, soak test shall be carried out.

4.9 The Contractor shall be responsible for Testing, Commissioning of the Tank, new piping network for the new tank including soaking and Flushing with Jet A-1 fuel

shall be performed by the Contractor. Jet A1 fuel on request of Contractor shall be provided by DAFFPL

4.10 Coordination with Fuel farm operator for all the permits and approval for site access

4.11 Contractor ensure that, No / minimum hindrance caused to existing fuel farm operation and any temporary arrangements needs to be done to facilitate the same shall form part of scope of Contractor.

4.12 Upgradation of firefighting system, fire detection and alarm system required as per site conditions. This shall include the foam system and cooling system for tanks as well as foam tank as deemed necessary.

4.13 Impervious flooring in the dyke area meeting OISD standards.

4.14 Lighting system to provide adequate illumination in tank dyke area meeting the lux requirement as per OISD & applicable standards.

4.15 Design & Provide lightning arrestor system etc., as per Code requirements including Earthing & Cathodic Protection of Tank.

4.16 Since IGIA Airport is operational and Existing fuel farm shall be under operation during this expansion works, all necessary safety precautions and procedures shall be considered, example hot work permit, hot work in confined space, working at height, protection from existing fuel farm facilities using proper barricading, Fire Screen Walls and fire blankets etc. Maximum possible welding shall be done outside the fuel farm premises, unless and until it is not practically possible to weld outside the premises.

4.17 Complete fire barricading shall be provided between the construction area and the existing fuel tanks and hydrant system, so as to completely eliminate any possible risk/hazard. Fuel vapour monitors and gas monitors shall be used to assess the site condition before each and every activity, especially hot work

4.18 All material movements shall be restricted within the existing fuel farm area to the extent possible.

Loads and environmental conditions

4.19 Loads shall be calculated according to Indian Standard and Regulations (Load factors, shape factors, wind loads, etc.).

4.20 Design max/min temperatures must be selected from historical data from the last 30 years or local engineering practice, whichever is stringent. Installations exposed to direct sunlight must be designed to allow for excessive heating as per the local ambient conditions during peak summer.

4.21 Earthquake requirements shall be taken into consideration for the design. These requirements shall apply for the foundations for the tanks, all structural elements and piping design.

Lifetime

4.22 The design life for the fuel tanks shall be 50 years.

Performance Specifications

4.23 This specification relates to the design, supply of Material, Fabrication and Installation of Piping works, handling, erection, non- destructive testing and water testing of vertical storage tank for Jet A-1, including the design and construction of the Tank Pad foundation and necessary Electrical and Instrumentation works.

Tank farm

4.24 The minimum separation distance between tanks and between tank and bund wall shall be according to OISD & PNGRB. Where there are no such guidelines, regulations are not available, the international guides NFPA 30 or IP 19 may be used.

4.25 To secure an easy and safe entry to the tank farm, tanks and other installations, stairs and walkways shall be installed where it is necessary. Stairs, walkways and platforms shall be designed according to requirements given ISO 14122 or other recognized standard.

Storage tank design

4.26 Tanks shall be designed according to API 650 and other recognized aviation fuel storage tank standards. All general requirements given in El 1540 and other requirements given in local and national standards shall be followed. The tank shall be designed as fixed cone roof vertical tanks (CRVT).

4.27 Tanks shall be designed and installed to allow settling and removal of water and particulate matter from a low point connection. The tank bottom shall be sloped with a coned down bottom to a low point sump with a slope of min. 1:30.

4.28 The inlet to each of the tank shall be below liquid level and will be equipped with a baffle arrangement in order to reduce the disturbance during filling.

4.29 The tanks shall be equipped with a central drain connection so water can be collected at the bottom of tank and drained to the product recovery tanks. Connection till existing piping is in scope of the contractor.

4.30 Fuel Delivery to pumps will be through floating suction system and the velocity inside the floating suction should be restricted in order to minimize the risk of vortex formation and air entering the pump system. Contractor to prepare calculation sheet accordingly.

4.31 The tanks shall be equipped with two manholes on the lower ring on the tank shell, where at least one must be sufficient1y large to handle the floatation devices. Provision shall be provided for inspection of floating suction device with position indicator.

4.32 All tanks shall be vented to prevent overpressure and/or vacuum that is outside the design limits for the tank. Tank vents shall be designed according to API 2000 — Venting atmospheric and low-pressure tanks.

4.33 Tanks shall have access stairs. All stairs, walkways, ladders, etc. shall be in accordance with requirements given ISO 14122 or other recognized standard. If company specific regulations are more stringent, these shall be used.

4.34 Tanks shall be provided with Fire water sprinkler circuit for the tanks connected to the Fire ring main. Foam injectors meeting the local and national guidelines shall be provided. Existing infrastructure of tank VF206/205 has to be replicated as a minimum.

4.35 Tanks shall have automatic tank level gauging system which shall be integrated with the automation and tank gauging system already existing in the fuel farm. Further, tank shall also have gauging mechanism to depict level of tanks at the exterior of tank, suitable method to be proposed by the contractor.

4.36 ESB for the additional tankage area shall be integrated with the existing system.

Tank Painting

Minimum requirement for External and Internal painting of the fuel storage tank shall be as per Annexure II “Tank Painting Specification”

Roof top anti-slip painting on demarcated walkway area

Tanks will have "walkway areas" painted on the roof in general 800 mm wide. The paint is to have anti-slip properties or to be formulated with sand in the paint to give an anti-slip property.

Piping in tank farm area

4.37 Piping systems located inside the tank farm boundaries shall be designed in accordance with ASME B31.3 or other recognized standard.

4.38 Jet A1 fuel of different grades shall be completely segregated. The provision shall be as per the guidelines given in El 1540.

4.39 The following pipeline systems are included: Main import line(s)

4.40 Extension of existing delivery header to the new storage tank

4.41 Extension of supply lines to new storage tank

4.42 Extension of drain & sampling lines , Extension of the recirculation lines etc.

General:

4.43 The design pressure of the piping shall be 19.0 bar. Operating pressure shall not exceed 14 bar as stated in El 1584. These requirements shall be cross verified with existing operating parameters and accordingly new system shall be designed and installed.

4.44 Suction lines from tank shall have minimum slope of 0.5 % to the pumps. Draining and sampling lines shall also be sloped to product recovery tanks.

Utility systems

The following utility systems shall be extended / integrated with existing utility infrastructure provisions. However, Contractor shall assess the existing utilities and if required, same shall be enhanced / upgraded to cater to the requirements of new tank. All these works shall form part of scope of work of Contractor. Following are the existing utility system needs to be integrated with new facility but not limited to, all the requirements shall be met and installed for efficient operation of entire fuel farm facility including new tank:

Fire extinguishing system

Firewater system Foam System

Drain system

All associated Instrumentation and control works

All associated electrical works

Piping – Inlet Lines

Piping – Delivery Line

Piping – Associated piping at tanks

Fire extinguishing system

4.45 The fire protection (Detection and fighting) system shall be designed and provided as per the applicable codes and standards. Wherever local codes and laws are silent on particular provisions, same shall be designed according to relevant international standards subject to approval from employer.

4.46 The assessment of fire water storage, fire hydrants, foam and related system shall be provided as per the requirement of codes and standards and shall be approved by local fire authority.

4.47 The Contractor shall ensure the entire fuel farm including the proposed expansion is in conformity to the code requirements for the provision of firefighting fire detection, fire suppression system. All requirements to comply with statutory guidelines (PESO, OISD, PNGRB etc.) on the account of construction tank this tank shall be complied with by the contractor.

4.48 The scope shall also include integration with the existing fire alarm panels, SCADA and augment the capacity if required. As per the standard fire protection requirement, fixed firefighting systems (cooling and/or foam) shall be necessary in the tank farm area.

4.49 Firefighting fittings such as foam injection points/nozzles and deluge systems shall be installed in accordance with El 1540. Platform & facility for testing of foam injection points/ nozzles shall be provided on the tank roof.

Sampling and testing

4.50 During handling and storage of fuel, samples are required to be obtained for laboratory or visual examination in order to secure that the fuel meets the

requirements of the relevant specifications and requirements. Sampling and testing is also required for detecting any contamination or deterioration.

4.51 Sampling system shall be provided as per the latest requirements given in JIG 2. Procedures given in ISO 3170, ASTM D4057, ASTM D6469 and/or other approved standard/guidelines shall also be followed.

4.52 The sampling provisions provided shall facilitate the following,

- Samples have to be taken from upper, middle and lower depth of the tank.
- Single tank composite, bottom, drain line and line sample are also samples that have to be done according to JIG 2.
- Fast Flusher along with sampling piping system within Dyke area of Fuel Farm.
- Aljac closed sample system, 50 Litre capacity, Stainless Steel base, complete with Stainless Steel support framework, glass tube, lift and turn lid mechanism, inlet flanged 1 inch ANSI B16.5 150lb raised face, outlet flanged 1 1/2 inch ANSI B16.5 150lb raised face, fitted with integral close coupled outlet valve, spring return low point outlet sample valve, and spring return inlet valve. Complete with all accessories and piping connection as existing.

4.53 All manual sampling points at a location shall have spring released ball valves or similar arrangement shall be provided. These lines shall be connected back to product recovery tanks.

4.54 The materials for sampling equipment shall be as per ASTM D4306 and other approved standards.

Materials and surface treatment

4.55 Materials - Pipe materials shall be of carbon steel in accordance with ASTM A106 Grade B, API 5L Grade B or equivalent and Pipe size 4" below shall be SS 316. Flanges material shall be ASTM A105. Fitting material shall be in accordance with ASTM A234 Grade WPB. Stainless steel flanges shall be considered for line size 4" below.

4.56 Tank materials shall be specified as carbon steel in accordance with API 650 or other recognized and approved standard.

4.57 Valves material shall be AISI 316, ASTM A216 Grade WCB or equivalent.

4.58 Gaskets shall be spiral wounded in AISI 316, graphite and shall be impervious and withstand jet fuel and it shall not affect the quality of jet fuel.

4.59 Copper or cadmium alloys, cadmium plating, galvanized steel or other zinc material coating shall not be used

4.60 Surface treatment - ERW Carbon steel pipes (API 5L Grade B) shall be delivered with a shop or mill applied internal epoxy resin lining suitable for Jet A-1 as well as for water.

4.61 Above ground pipes shall be externally coated to protected from corrosion and/or heating from direct sunlight. Pipe supports shall be designed to minimize the corrosion at contact points.

4.62 All pipes installed below ground shall be supplied with a shop or mill applied external coating of polyethylene, polypropylene coating for corrosion protection according to El 1540.

4.63 All carbon steel tanks shall be coated on all internal surfaces with an epoxy resin lining suitable for Jet A-1 and tested according to requirements given in El 1541. It shall also be warranted by the manufacturer to be compatible with jet fuel.

4.64 If other tank materials than carbon steel are used where internal coating is not needed, it is essential to assure that the tank material is suited for and will not affect the quality of the product. This may be followed subject to employer's approval.

4.65 Main storage tank and belonging fittings, etc. shall be externally coated with an oil-resistant painting for corrosion protection. The painting shall also minimize the evaporation of product.

4.66 All Tank surfaces shall be grit blasted to achieve roughness SA 2.5 in accordance with applicable standards.

Mechanical equipment

4.67 Specifications must be prepared for purchase of major mechanical equipment like: Floating suction units, Valves

4.68 Floating suction unit shall be installed in ATF storage tank and shall be as per the requirements for handling jet fuel. System arrangement shall be such that, it shall

be possible to carry out regular checks of the buoyancy for the unit. All moving parts shall be of stainless steel.

Electrical system

4.69 The electrical system shall be designed as per the applicable codes and standards. Wherever local codes and laws are silent on particular provisions, same shall be designed according to relevant international standards subject to approval from employer. All electrical installations shall be EX-certified in areas where a potential explosive atmosphere can arise.

4.70 A stable and secure power delivery is essential to maintain a reliable operation of the system. Internal distribution of electrical power shall be carried out through the main switchboard room. The electrical power system shall be designed with focus on the following areas: Safety, Operational security and Flexibility.

4.71 The most important factor for the terminal is safety, both in terms of personnel and material. The design of the electrical system shall be in accordance with all the relevant international and national rules and regulations for this type of plant.

Civil/structural

4.72 Any buildings and other civil constructions shall comply with Nation al building code 2016 and including but not limited to, JIG2 and EI1540.

4.73 The foundations for the new tank are to be provided by the contractor in accordance with API 650. Structural design, assessing the suitability & load carrying capacity of the required foundations shall form part of his scope. The Contractor is expected to visit site for getting all necessary survey data required for Civil as well as other disciplinary work to be carried out in conjunction with New ATF storage Tank. All works related to tank have to conform to API650.

Dyke Wall and Dyke area

Structural design, assessing the suitability & load carrying capacity of the required Dyke wall foundations shall form part of his scope.

The fooling shall be made impervious with the use of HDPE sheets. Areas within Dyke wall will be paved with concrete and drained to the oil/water separation system. Drain channel for dyke are shall be in Contractor scope of work. Impervious flooring & painting as per existing is in the contractor's scope.

Commissioning, testing and documentation

The new tank and associated equipment shall be tested in phases before the system can be hooked in to the existing system and put in to full operation. The procedure and requirements shall be as per El 1540 and API 650. Contractor to submit detailed Commissioning & testing procedure for approval from DAFFPL.

Inspection

After completion of the installation of the new tank and associated systems, a detailed inspection of mechanical completion shall be undertaken to verify that all the equipment installed and located according to design drawings and comply with relevant codes and standards. Comprehensive Checklists shall be prepared based on engineering drawings, codes and standards.

System testing

Pipelines and tanks shall be inspected and tested according to pipe standards and tank standards. Pipelines and tanks shall be hydraulically tested. Test pressure for piping shall be a minimum of 1.5 times the design pressure. All the testing shall be witnessed by the competent personnel from contractor side as well as employer side. The testing report shall be signed by all the representatives.

Inspection & approvals

- On completion of the works the contractor is responsible to obtain approvals from all competent authorities (including but not limited to PESO, local fire authorities, AAI and any other regulatory bodies.). All cost in relation to obtaining approval from competent authorities shall be borne by the contractor except the applicable statutory fee, which shall be paid by DAFFPL.

Commissioning

Post successful completion of testing and approval, commissioning shall be carried out according to El 1540 and/or other recognized approved standard in presence of all relevant representatives from Owner / employer. Commissioning procedure shall be developed by the contractor for approval from the client. Only post approval of this documents.

Pipelines and tanks shall be soak tested. Sample Collection, processing at DGCA approved Lab (Test A & Test B) & submission of report to DAFFPL for product sampling during soak testing & flushing procedure. Cost of retesting is included in this scope, in case initial sample fails testing.

Intermediate preservation'

Should the hydrant and/or tank farm with adjourning system be completed more than three months prior to hot commissioning, there will be necessity to preserve the system. All pipes shall be confirmed dry and free of contaminations. The piping shall then be filled with pure nitrogen and sealed off while maintaining gauge pressure of 2.1 to 2.2 Kg/ Cm2

5.0 Detailed Scope of Work

5.1Civil & Structural Steel Work

The scope of work of this tender involves supply of all materials, construction, inspection, testing as per attached tender drawings, scope of work, specifications and standards for civil works. Any other work not listed below but shown in drawing shall form overall scope of work.

The scope of work mainly involves as described below, but not limited to the following:

5.1.1 Clearing of proposed site from all debris, stripping of the area, removing vegetation, grass, shrubs, roots etc.

5.1.2 All materials supplied shall be new, of best quality and tested in accordance with the latest version of the relevant Indian standards or relevant international standard & codes acceptable to Client. The contractor shall indicate make and grade of all bought out items for approval from Client / Owner.

5.1.3 All moving Equipment's or parts of erection equipment, which can conceivably cause injury to the operator or other authorized personnel within the vicinity of the working area, shall be suitably guarded. Selection of equipment shall be made with the following in view:

a) Safety of personnel,

b) Long life of equipment,

c) Uninterrupted operation,

d) Easy maintenance

5.1.4 Contractor / Bidder shall have to take all safety precautions for carrying out hot work in the premises after obtaining hot work permit from site in charge at his

own cost as directed by the Engineer-in-charge.

5.1.5 Necessary safety equipment such as safety belts, helmet, etc. and other safety instruments are to be positioned by the contractor and the same shall be used by the work force as per work requirement.

5.1.6 The suitability and capacity of all equipment used for erection shall be to the satisfaction of the Engineer-in-charge of Client / Owner.

5.1.7 The Contractor's scope shall include carrying out any and all works and providing any and all facilities & services those are required in accomplishing an operating system complying fully with all tender and statutory requirements as are envisaged, complete in all respects and satisfying all performance and guarantee requirements as stated or implied from the Contents of the tender document.

5.1.8 Topography Survey:

Topography survey, Soil Investigation Survey activities required for detail engineering shall be carried out by the Contractor at no extra cost to the Owner / Client.

5.1.9 Geotechnical Investigation

Geotechnical investigation work required for residual detail engineering (If envisaged) shall be carried out by the Contractor with no extra cost to the Owner / Client. Contractor to propose Tank Pad foundation based on the Geotechnical Investigation report. If envisaged Pipe foundation based on geotechnical investigation report, then Contractor shall carry out the work within the quoted cost only. No additional payment shall be made towards Pile foundation for Tank Pad foundation.

5.1.10 Underground Detection Survey:

Contractor shall carry out underground detection survey in the area of Construction or entire area as directed by the Engineer In charge by physical site survey, review of existing area drawing, carry out trial pits to ensure underground utilities are appropriately protected. This survey shall be carried out prior to commencement of Civil Excavation works for Construction area. Contractor shall prepare drawings reflecting the findings of topography survey and underground detection surveys and shall use to plan the Excavation / demolition works, rerouting of existing utilities if any and construction

activities.

5.1.11 Demolition Works & Re-Location works:

There will be work related to demolition activity in this project. Contractor shall carry out demolition of Existing structures, Existing footings, foundations in phased manner as per approved demolition Plan / Drawing. Work shall comply with the project specifications. Contractor shall study all these activities and sequences in which it will be carried out. Contractor shall identify existing underground and above ground utilities to be rerouted / relocated / modified. These existing utilities shall be restored at designated location as per direction of Engineer In charge with no additional cost to the Owner / Client.

Following relocations (complete in all aspect) are envisaged which shall be carried out by the contractor;

1. Modification/re-routing of delivery header at dyke intersection between VF205 & VF 206 and connection to delivery header from new storage tank

2. Modification, re-location (WCFM) & re-routing of fire header for water cum foam monitor at the construction area of VF207 & SITC of isolation valve for same. Connection of Foam pipeline from existing network.

3. Modification/re-routing of water sump drain & pump & creation of new sump at VF206

4. Modification/re-routing of High Mast & CCTV along with suitable connection to ensure they are working.

5. Modification of center catwalk till the end of dyke at tank VF207

5.1.12 Site Preparations and temporary facilities

Contractor shall carry out site preparation activities keeping in to account operational Fuel Farm premises and shall avoid unnecessary works at site which will hamper the Fuel Farm operations nearby area.

Contractor shall install all temporary facilities as per project requirement for the execution of the job only after approval from Owner / Client or their stakeholders.

5.1.13 Contractor shall refrain from using explosives for excavation of rock if any.

5.1.14 Clearing of proposed site from all debris, striping of the area, removing vegetation, grass, shrubs, roots etc.

5.1.15 Trial Pits at foundation location for checking presence of any existing underground utilities prior to commencement of excavation as directed by Engineer In charge.

5.1.16 Necessary precaution and care shall be taken during excavation / construction of foundation/ RCC structure to avoid disruption to existing utility/ facility (Pipes, cable trenches etc.).

5.1.17 Earthwork in excavation for area grading / development, RCC foundations/plinth beams (including dewatering) etc. as per tender drawing and approved plans from Client / Owner.

5.1.18 Segregation of unserviceable material and good earth for use for filling and disposal of unserviceable material, debris etc. as instructed by Client / Owner Site In-charge.

5.1.19 Preparation of fabrication & erection drawings for Structural Steel works for Access Platforms, Access Ladders, Working Platforms etc. including connection design details and getting approval from Client / Owner.

5.1.20 Completing all Civil RCC works for dyke wall, tank foundation as per API 650 (Ring Wall for ATF Tank), drains, duct banks, utility chambers / Pull Pits, Earthing Pits, Drain Chambers, etc. complete in all respect as per Good for Construction drawings.

5.1.21 Completing all Civil RCC / PCC Pavement Works for area inside dyke wall etc. complete in all respect as per Good for Construction drawings.

5.1.22 Providing dust control measurements at construction area and during transportation of debris.

5.1.23 Fabrication & Painting of Structural steel works complete in all respect as per specifications and drawings.

5.1.24 Any other work to complete the job in all respect.

5.1.25 If required Contractor shall carry out Geotechnical investigation to determine soil properties including in SBC & Pile capacities.

5.1.26 Scope of Supply

A. Contractor's Scope of Supply

i. Connect to Power & Water source provided at any point inside Fuel Farm.

ii. Cement, Reinforcement, Structural Steel, Masonry Material, Finishing Material, GI Grating, Chamber Covers, finishing items, paint material for different shades including primer intermediate and final paint & Structural steel.

iii. All items consumables / non consumables required to complete the job

iv. All tools tackles, plant machinery etc. to complete the job.

5.2 ATF Storage Tank CRVT (VF 207):

The scope of work includes supply of Material, labor, equipment, Temporary facilities / Structures and other items whatsoever required for or in connection to complete the works as per approved Good for Construction Drawings, project specifications and Responsibility Matrix.

5.2.1 Contractor shall be responsible for Supply, Handling, fabricating, Erection, welding of Tank Bottom Plates, Tank Bottom Sump, Shell Plates, Roof Plates, Shell Plate, painting internal and external to Tank Bottom, Shell, Roof Plates, floating suction, dual fire sprinkler rings, foam pourer system with foam proportioner, wind girders and any other necessary works as per approved construction drawings (construction drawings are to be made by the contractor).

5.2.2 Contractor shall be responsible for submission of all necessary Work Method statements, Erection Method statements in line with the Project requirement and getting approval of the same from Client / Owner.

5.2.3 Contractor shall be responsible for carrying out Radiography as per API 650 and approved RT method statement / procedure.

5.2.4 Contractor shall be responsible for supply and installation of temporary works required to ensure the safe, uninterrupted and convenient working place at height including but not limited to prefabrication works and Tank Fabrication / Erection works.

5.2.5 Contractor shall be responsible for supply and installation of structural steel for Roof & Platform gratings (Electro forged Hot dipped galvanized coating to BS 1461)

for ATF Storage Tank as per approved QAP, ITP, method statement and approved Good for Construction drawings

5.2.6 Contractor shall be responsible for supply of Grit Material as per approved specifications and blasting to Tank Plates, Roof Structure and other misc. attachment to the tank like Spiral staircase, Roof Platform, Handrail, Tank Nozzles, Sprinkler pipes, Reinforcement pads, Tank shell attachments etc. to achieve surface roughness as per approved method statement and approved for construction drawings.

5.2.7 Contractor shall be responsible for supply of Paint Material (Primer / Intermediate and Final Paint) as per approved construction drawings and application of the same as per approved method statement and approved for construction drawings. Tank Paint material shed / Color approval for Primer, intermediate and final paint shall be obtained by Contractor from Owner / Client before procurement of Paint.

5.2.8 Contractor shall be responsible for Supply, Handling, fabricating, Erection, welding of Tank Nozzles along with necessary reinforcement pad, Earthing Boss, Anchor Chair, Tank to Tank Interconnecting Platforms, Tank Miscellaneous attachments and any other necessary works as per approved construction drawings.

5.2.9 Contractor shall be responsible for Supply, and Erection of Dip Pipes (MOC Carbon Steel, Stainless Steel), Floating Suction, Fire Sprinkler system for ATF Tanks, Fabrication and welding of Roof and Shell Nozzles, Manholes, Instrument Nozzles, ATF Draw off Nozzles etc. and any other necessary works as per approved construction drawings.

5.2.10 Contractor shall be responsible for carrying out Hydro Test of the Storage Tank as per approved Method Statement, codes / standards and Responsibility Matrix.

5.2.11 Contractor shall be responsible for carrying out Calibration of the Storage Tank as per approved Method Statement, codes / standards and Responsibility Matrix.

5.2.12 Contractor shall be responsible for Documentation which includes Shop drawings, Fabrication Drawings, Erection Drawings, materials certificates, documentation for all construction works and documentation for Salt Content test, Blasting, Primer / Intermediate / Final Paint application, Prefabrication reports, fit up Report, Erection Reports, Welding Reports, RT films, RT Reports, Hydro Testing reports, Tank Calibration Reports and necessary reports in conjunction with the approved construction drawings, specifications and client requirements.

5.2.13 Third Party Inspection for the Tank Fabrication, Erection, Testing and commissioning works. The appointed Third Party shall have prior approval from Client / Owner before commencement of Mechanical Fabrication and Erection works of Tank and Tank structure Works.

5.3 Piping Works (ATF & Fire Water Pipeline Aboveground and Underground)

5.3.1 The scope of work includes supply of Material like Pipes (Process and Fire Water), Pipe Fittings, Flanges for Piping, Special Items like Gate Valves, Control Valves, Double Block and Bleed Valves, Remote Operated Shutoff Valves, Motorized Valves, Ball Valves, NRV, Spring Loaded Valves, Sampling Valves, Fast Flusher, Sight Glass etc., labor, equipment, Temporary facilities / Structures and other items whatsoever required for or in connection to complete the works as per approved Construction Drawings, project specifications and Responsibility Matrix.

5.3.2 Contractor shall be responsible for Supply, Handling, Loading, Unloading, Transportation of Material, fabricating, Erection, welding of different diameter Pipes, Radiography of weld joints, Hydro test of erected Process piping segments / network and any other necessary works as per approved construction drawings, BOQ and Responsibility Matrix.

5.3.3 Pipe Line Welding

General Requirements

All welding shall be as per API 1104 latest edition. All pipe work shall be of butt weld construction in accordance with Pipeline Material Specifications. Flanged joints shall also be provided to match the connecting ends of valves or where specified. Only qualified welders proficient in welding in the vertical and overhead positions shall be allowed to weld these pipes/fittings. It shall be Contractor's responsibility to arrange for Welder Qualification test and bear all costs towards testing of welders. The Specification for Welding shall be followed for the fabrication of all types of welded piping and pipeline joints in accordance with attached documents / relevant codes and Standards.

The following steps shall be taken besides controlling quality in general, to make effective control in carrying out welding:

5.3.4 Welding procedure (PQR & WPS) shall be prepared as per API 1104 and tests shall be carried out to qualify the procedures. Number of procedures will depend on variables like positions of welding, thickness range, etc. Once a welding procedure is qualified, strict adherence to it shall be made during actual welding.

5.3.5 Welders employed shall be qualified as per API 1104. For specific work Client / Owner will have the right to check/ witness the certificate(s) / test(s) before and/or during execution of work.

5.3.6 Makes of welding consumables such as electrodes, filler wires, argon, etc. shall be approved make by Client / Owner before using it. Such consumables are, however, subject to qualifying initial check tests as per API codes.

5.3.7 The Contractor shall submit batch test certificates, from the electrode manufacturers, giving details of physical and chemical tests carried out by them, for each batch of electrodes to be used to Client / Owner.

5.3.8 All electrodes shall be purchased in sealed containers and stored properly to prevent deterioration. The electrode shall be handled with care to avoid any damage to the flux covering.

5.3.9 The electrode, filler wire and flux used shall be free from rust, oil, grease, earth and other foreign matter, which affect the quality of welding.

5.3.10 Welding shall not be performed when surfaces to be welded are wet, when rain is falling on such surfaces or during the period of high winds unless the welder and the works are shielded in an approved manner by a temporary hut.

5.3.11 Joint preparation for welding shall be so as to leave a smooth finished profile free of cavities and conforming to standard practice. Edges shall be cleaned of rust, scale, slag, dirt and other foreign matter before welding.

5.3.12 The throat thickness of the tack welds shall be similar to that of the initial root to be deposited in the groove and where necessary the extremities of the tack welds shall be dressed by grinding, chipping and flame gauging to facilitate proper fusion when they are incorporated in the initial root run. Bridge tacks (above the weld) shall be removed.

5.3.13 All slag and scales etc. shall be removed from the surfaces of each completed bead before depositing the next bead.

5.3.14 The finished weld shall present a smooth bright and shiny surface of constant width and uniformly spaced ripples. The welds shall be free from slag pockets, porosity, undercutting, incomplete penetration and fusion and other weld defects as described in relevant specifications.

5.3.15 The weld protrusions, spatter etc., on the weld surface and adjacent area shall be

removed so as to leave the surface smooth and clean.

5.3.16 To maintain the specified alignment and gap during welding the pipes shall be securely held in position by pipe external clamps. Removal of pipe clamps used for welding will permitted after completion of root run.

5.3.17 Contractor shall be responsible for carrying out Radiography as per API 1104 and approved RT method statement / procedure and approved construction drawings.

NDE of Welds

5.3.18 All pipe weld joints have to undergo 100% Radiographic inspection. Tank welds shall be subject to RT as per API 650.

5.3.19 The use of alternative methods of NDE such as magnetic particle or liquid penetrant methods may only be used where radiography cannot be carried out. The use of these methods shall have been reviewed without objection by Client / Owner prior to implementation.

5.3.20 The Contractor shall ensure that site inspection and radiographic examination procedures comply with the requirements of API 1104. The procedures shall have been reviewed and approved without objection by the Client / Owner prior to use.

5.3.21 Radiograph exposure records of date, location, area, film number, serial number, film combination, time, source-film distance, angulation, weld number and other pertinent information shall be prepared and kept and a summary with an expert interpretation by an independent laboratory shall be submitted to Client / Owner for each weld.

5.3.22 Safety is of paramount importance and the Contractor shall only carry out radiographic examination of welds when the relevant area is clear and personnel are not at risk.

5.3.23 Contractor shall be responsible for submission of all necessary Work Method statements, Erection Method statements in line with the Project requirement and getting approval of the same from Client / Owner.

5.3.24 Contractor shall be responsible for supply and installation of temporary works required to ensure the safe, uninterrupted and convenient working place at height including but not limited to prefabrication works and Process piping Erection works.

5.3.25 Contractor shall be responsible for supply and installation of structural steel for

pipe supports per approved QAP, ITP, method statement and approved construction drawings.

5.3.26 Contractor shall be responsible for supply of Grit Material as per approved specifications and blasting to external surfaces of prefabricated pipes spool and erected process piping, Fire Water Piping Network, pipe supports and other misc. attachment to the process piping and Fire water piping network to achieve surface roughness as per approved method statement and approved for construction drawings.

5.3.27 Contractor shall be responsible for supply of Paint Material (Primer / Intermediate and Final Paint) as per approved construction drawings and application of the same as per approved method statement and approved for construction drawings. Process Piping and Fire Water Piping Paint material shed / Color approval for Primer, intermediate and final paint shall be obtained by Contractor from Owner / Client before procurement of Paint.

5.3.28 Contractor shall be responsible for carrying out Hydro Test of the Process and Fire water piping segments / network as per approved Method Statement, codes / standards and Responsibility Matrix.

5.3.29 Contractor shall be responsible for Supply and installation of Manual / Motorized valves, Double Block and Bleed Valves, Remote Operated Shut off Valves (Tank Body Valves) Flanges, Tank Instruments, Fast Flusher, etc. as per approved Method Statement, codes / standards, approved Construction Drawings and Responsibility Matrix.

5.3.30 Contractor shall be responsible for supply and installation of gasket (Different Types and sizes) required fasteners for piping network and necessary Anchor Fasteners for Piping system supports, supply and erection of wrapping coating material for underground section (Road Crossing / utility crossings / Gate crossings etc.) of fire water piping segments as per approved construction drawings, Responsibility Matrix and approved method statement.

5.3.31 The contractor shall submit Quality assurance plan (QAP), additional details like procedure / method statements and Shop Drawings for approval by client/consultant/Project Manager. All works to be carried out as per approved QAP and Approved Construction Drawings.

5.3.32 All approvals, instructions, permission, checking, review etc. whatsoever by the client/Consultant/Project Manager shall not relieve the contractor of his

responsibility and obligation regarding adequacy, correctness, completeness, safety, strength, quality, workmanship etc. of the works.

5.3.33 Contractor shall carry out works in conjunction with approved specifications, approved method statement, and approved work procedures, Responsibility Matrix, approved construction drawings and relevant codes and standards. Contractor shall carry out the works in true intend abiding all necessary relevant documents / drawings, codes / standards and project specifications.

5.3.34 Contractor shall be responsible for Documentation which includes Shop drawings, materials certificates, documentation for all construction works and documentation for Salt Content test, Blasting, Primer / Intermediate / Final Paint application, Prefabrication reports, fit up Report, Weld visual reports, Erection Reports, Welding Reports, RT films, RT Reports, Hydro Testing reports, Calibration Reports and necessary reports in conjunction with the approved construction drawings, specifications and client requirements.

5.3.35 Scope of Supply

i. Material (Pipes, Pipe Fittings, Flanges for Piping, Special Items like Fast Flusher for ATF and Fire Fighting pipeline, Gate Valves, Control Valves, Ball Valves, spring loaded valves, sampling valves, Single headed Fire Hydrant Valves, Double Headed Fire Hydrant Valves, Fire Hose Reel along with its Cabinet Box, Thermal relief valves etc., Pressure Guages etc. labour, equipment, all items consumables / non consumables required to complete the job

ii. All items consumables / non consumables required to complete the job related to civil, electrical, mechanical & integration works at no additional financial implication

iii. All tools tackles, skilled/ unskilled manpower, machinery, testing equipments etc. to complete the job.

6.0 Documentation

6.1 All constructors and equipment suppliers have to prepare a given set of final documentation for all the deliverables. This must be delivered according to local or regional regulations. If relevant standards are more stringent, same shall be followed.

6.2 All piping materials and components shall be provided with certificates in accordance with ISO 10204 or similar.

6.3 Pipes, flanges and fittings for welded piping: Certificate 3.1 Bolting and gaskets: Certificate 2.1 Documentation requirements to certification, welding procedure, NDT etc. for welded joints shall be according to standards.

ANNEXURE - I
VENDOR LIST

0	07-05-2022	For Initial Approval	DR	AP	SKJ	
Rev	**Date**	**Description**	**Prepared**	**Reviewed**	**Approved**	**Client Review**

1.0 LIST OF APPROVED MAKES FOR CIVIL WORKS

SR. NO.	MATERIALS	APPROVED MAKES
1.	ORDINARY PORTLAND CEMENT (Grade 43)	**ULTRA TECH** **JP** **JK** **BIRLA** **ACC** **MADRAS CEMENTS** **INDIA CEMENTS** **AMBUJA** **DALMIA** **ZUARI** **RAMCO**
2.	STRUCTURAL STEEL - SECTIONS, PLATES, RODS, FLATS, STRIPS ETC.,	**TATA** **SAIL** **VIZAG** **JINDAL**
3.	MS TUBULAR SECTIONS	**TATA** **SAIL** **VIZAG** **JINDAL**
4.	REINFORCEMENT STEEL MILD STEEL AND MEDIUM TENSILE BARS	**TATA** **SAIL** **VIZAG** **JINDAL**
5.	REINFORCEMENT STEEL HIGH STRENGTH DEFORMED STEEL BARS	**TATA** **SAIL** **VIZAG** **JINDAL**
6.	BURNT CLAY BUILDING BRICKS	**ANY APPROVED MAKE MEETING SPECS**
7.	WATERPROOFING COMPOUNDS	**FOSROC** **ROFF** **SIKA** **CICCO** **ACC** **PIDILITE** **DR. FIXIT** **IMPERMO**
8.	FLOOR HARDENER	**IRONITE** **HARDONITE**

		FOSROC **PIDILITE** **DR. FIXIT** **SIKA** **HARDCRETE**
9.	ACRYLIC EMULSION, PAINTS, DISTEMPERS	**I.C.I.** **BERGER** **ASIAN** **NEROLAC** **JENSON & NICHOLSON** **DULUX** **NIPPON** **BRITISH PAINTS**
10.	WATER PROOF CEMENT PAINTS	**SNOWCEM PLUS** **DURACEM** **SUPREME** **SURFACEM** **BERGER** **JP** **BRITISH PAINTS**
11.	FLOAT GLASS	**INDO-ASAHI** **MODI FLOAT** **SAINT GOBAIN** **GUJARAT BOROSIL** **BINANI** **HNG FLOAT GLASS LTD. / AIS FLOAT**
12.	PRECAST CEMENT CONCRETE KERBS	**EUROCON** **ULTRA** **SOBHA OR EQUIVALENT APPROVED MAKE**
13.	RCC HUME PIPES	**INDIAN HUME PIPE CO. LTD. OR EQUIVALENT AS APPROVED**
14.	ROAD MARKING PAINTS	**SHALIMAR** **MRF** **ASIAN**
15.	PVC PIPES AND FITTINGS (CABLE CONDUITS)	**BEC** **INDERSONS** **AVONPLAST** **UNIVERSAL**
16.	PVC PIPES AND FITTINGS (RAINWATER / WASTE)	**SUPREME** **FINOLEX** **PRINCE** **TRUBORE** **KISSAN**
17.	CPVC PIPES & FITTINGS	**ASTRAL**

		ASHIRWAD **SUPREME**
18.	UPVC PIPES & FITTINGS	**ASTRAL** **FINOLEX** **SUPREME** **PRINCE** **KISSAN**
19.	GI PIPES	**TATA** **ZENITH** **JINDAL** **SWASTIK**
20.	GI FITTINGS	**TATA** **'R' BRAND** **K BRAND** **UNIK**
21.	SUBMERSIBLE PUMP-SET FOR WATER	**ATLANTA** **SUGUNA** **TEXMO** **SULZER APPROVED EQUIVALENT**
22.	MOTOR FOR SUBMERSIBLE PUMP-SET FOR WATER	**ANY IS APPROVED MAKE**
23.	FIRE BUCKET	**ANY IS APPROVED MAKE**
24.	INTERLOCK CONCRETE PAVERS / KERB STONES	**APPROVED MAKE MEETING SPECIFICATIONS**
25.	EXPANSION JOINT FOR RCC WORKS	**SHALIMAR** **KAMPUN POLYMERS** **JOLLYBOARD** **SOFTEX INDUSTRIAL PRODUCTS** **DURON POLYVINYLS (P) LTD.**
26.	**POLY-SULPHIDE SEALING COMPOUND**	**FOSROC** **PIDILITE** **ANABOND** **DR. FIXIT** **NITOBOND**

2.0 LIST OF APPROVED MAKES FOR MECHANICAL WORKS

SR NO.	MATERIALS	APPROVED MAKES
1.	MS STRUCTURAL STEEL	SAIL TATA (TISCO) JINDAL / JSW VIZAG STEEL
2.	PIPE SS & TUBES (SEAMLESS & WELDED TO ASTM STANDARD)	HEAVY METALS & TUBES LIMITED (MEHSANA) REMI ENGINEERING WORKS RATNAMANI METALS & TUBES LTD. SANDVIK ASIA LTD. SAW PIPES LTD. NASIK SURAJ STAINLESS LTD
3.	PIPE (CARBON STEEL) (INDIAN STANDARD)	ADVANCE STEEL TUBE LTD. ASIAN MILLS PVT. LTD. JINDAL PIPES LTD. LALIT PROFILES & STEEL INDUSTRIES LTD. MAN INDUSTRIES (I) LTD. WELSPUN GUJRAT STAHL ROHREN LTD. STEEL TUBES INDIA BHANSALI BROTHERS
4.	PIPE CARBON STEEL (SEAMLESS TO ASTM STANDARD)	MAHARASHTRA SEAMLESS LTD. MAHALAXMI SEAMLESS LTD. HEAVY METALS & TUBES LIMITED (MEHSANA) PSL LTD. STEEL TUBES INDIA JINDAL INDIAN SEAMLESS METAL TUBES LTD.
5.	VALVE GATE CAST / FORGED CS & SS	LARSEN & TOUBRO LTD. NILON VALVE. OSWAL INDUSTRIES SAKHI ENGINEERS PVT. LTD. FLOWCHEM VALVES, AHMEDABAD HINA INDUSTRIES LEADER VALVES

6.	NON RETURN VALVE	LARSEN & TOUBRO LTD. LEADERS VALVES LTD. OSWAL INDUSTRIES SAKHI ENGINEERS PVT. LTD. HI TECH VALVES, CHENNAI FLOWCHEM VALVES, AHMEDABAD
7.	VALVE BUTTERFLY (CARBON STEEL)	ADVANCE VALVES PVT. LTD. LEADERS VALVES LTD. LARSEN & TOUBRO LTD. NUTECH CONTROLS FLOWCHEM VALVES, AHMEDABAD SAKHI ENGINEERS PVT. LTD.
8.	PIPE FITTINGS INCLUDING HALF COUPLING AND NIPPLES	CSA FITTINGS TUBE PRODUCTS TEEKAY TUBES SIDDHARTH GAUTAM MS FITTINGS
9.	PAINT	BERGER – Protectomastic XL -MIO ASIAN PAINTS Apcodur MIO
10.	FASTENERS (ALL TYPES CS / SS)	EBY INDUSTRIES FAKHRI FASTENERS, CHENNAI FASTENER & ALLIED PRODUCTS PVT. LTD. HARDWIN FASTENERS PVT. LTD. MULTI FASTENERS PVT. LTD. PACIFIC FORGING & FASTENERS
11.	GASKET (METALLIC & SOFT IRON, SPIRAL WOUND, NON-ASBESTOS, TEFLON)	IGP ENGINEERS LTD. MADRAS INDUSTRIAL PRODUCTS CHAMPION SEALS LEAK CONTROL UNI KLINZER JAMES WALKER INMARCO INDUSTRIES PVT. LTD. UNIQUE INDUSTRIAL PACKAINGS (P) LTD. SOUTHERN GASKET PRODUCTS
12.	FLANGE FORGED (CARBON / STAINLESS STEEL / GROOVED /	CD ENGINEERING CO. CHAUDHRY HAMMER WORKS LTD.

	THREADED)	M S FITTINGS MFG. CO. PVT. LTD. METAL FORGINGS PVT. LTD. JK FORGING PARAMOUNT FORGE KUNJ FORGINGS SUPER FORGE PVT. LTD. PUNJAB STEEL WORKS
13.	WELDING RODS	ESAB INDIA LTD. HONAVAR ELECTRODES LTD. ADVANI ORLEKONS (ADOR WELDING LTD.) D & H SECHRON ELECTRODES LTD. D & H WELDING KOBE STEELS
14.	PRESSURE GAUGES / TEMPERATURE GAUGE	WAREE INSTRUMENTS ASHCROFT INDIA PVT. LIMITED GE GAUGES PVT. LTD. H. GURU INDUSTRIES GLUCK (INDIA) LTD. BAUMER TECHNOLOGIES GENERAL INSTRUMENTS CONSORTIUM MANOMETER INDIA
15.	PRESSURE & THERMAL RELIEF VALVE	DARLING MUESCO NIRMAL INDUSTRIAL CONTROLS ASIAN INDUSTRIAL VALVES AND INSTRUMENTS TELEFLO INSTRUMENT CO. PVT. LTD. MEKASTER ENGINEERING LTD. PNUECON VALVES
16.	ACTUATOR FOR VALVES DBB / ROSOV / MOV	ROTORK EMERSION ROTEX
17.	INTERNAL EPIOXY COATING - ONE COAT OF PRIMER 75 MICRONS FRX ANTICORROSIVE COATING.	PSL COATING WELLSPUN MAN INDUSTRIES
18.	RETRACTABLE PLATFORM:	WOODFIELD LOADTEC CARBIS

		SILEA KANON EMCO WHEATON ATECO
19.	FLAME ARRESTOR AND BREATHER VALVE	PROTEGO PROCESS INSTRUMENT INDUSTRIES PENTATECH PRESSURE & FLOW CONTROL INDUSTRIES (PRE'CON) EMERSON PROCESS MANAGEMENT WADCO BUSINESS SOLUTIONS (P) LTD
20.	MECHANICAL SHOE SEAL	ROSHAN INDUSTRIES RELIANCE VAPOUR SEALING SYSTEM; PVT. LTD MAITRI INDUSTRIES SAI TOOLS VIRA ASSOCIATES
21.	FIXED WATER SPRAY SYSTEM ACCESSORIES / FIXED FOAM SYSTEM ACCESSORIES / BLADDER TANKS:	HD FIRE FIRE TECH VIMAL FIRE NEW AGE; ANY OTHER UL / FM APPROVED MANUFACTURER

SPECIFICATION FOR PAINTING

0	12-10-2021	Issued for Approval	PR	AP	SKJ	
Rev	**Date**	**Description**	**Prepared**	**Reviewed**	**Approved**	**Client Review**

1. PAINTING SPECIFICATIONS

1.1 GENERAL

1.1.1. This section defines basic requirements for painting of mild steel vertical cone roof storage tank.

1.1.2. It is deemed that the work shall be carried out by the contractor with the best quality of specified material and workmanship at his own cost.

1.1.3. The blasted surface shall not be kept exposed to atmosphere for more than 24 hours (particularly at night time when humidity %age in atmosphere is more and might spoil the surface prepared).

1.1.4. The first coat of primer shall be applied soon after cleaning and before any visible rusting occurs.

1.1.5. The paint coat shall be smooth and even and shall not show any trace of brush mark. The bands, lettering, etc. shall be carried out as per drawing after the external painting is completed.

1.1.6. Adequate numbers of required tools, brushes, blast material, scaffolding, shot/Blasting equipment, air compressors etc. shall be arranged by the contractor at site.

1.1.7. During storage and application of paints, the paint manufacturer's instructions shall be strictly followed. Particular attention shall be paid to the following:

- Proper storage avoiding exposure and extreme temperature
- Specified surface preparation
- Mixing and thinning
- Application of paints and the recommended time intervals between consecutive paint coats
- Two pack paint system shall be mixed by mechanical means. The Purchaser may allow hand mixing of small quantities at his discretion
- Restrictions for number of batches per tank

1.2 SCOPE OF TANK PAINTING

Scope of Tank Painting covered in this includes :

a. External surface of tank, shell, roof and appurtenances.
b. Underside surface of roof and roof supporting structures for CR tanks.
c. Structural steel, ladder, staircase, platform, walkway, handrail, etc.
d. Inside of shell.
e. Underside and upper side surface of tank bottom plates.
f. Inside surface of tank shell up to first strake height from bottom plate of CR tanks.

g. All internal and external non-aluminium fittings.
h. Entire internal painting of CR tanks.
i. All required stencilling.
j. Painting for all fire pipeline worked under this project.
k. Painting for all structural steel worked under this project.

1.3 Material Specification

1.3.1. Aluminium

The particles used for Blasting shall be free from moisture.

1.3.2. BRUSHES

The brushes used in painting shall conform to IS : 384.

1.3.3. PRIMER COAT

The primer used must provide good protection against corrosion and shall leave a tough adherent film which will form a suitable base for the following coats. It shall conform to given specifications.

1.3.4. FINISH COAT

The finish coats shall conform to given specifications.

1.3.5. Paints used shall be of superior grade paints of approved make and quality and conform to given specification shall be used. Contractor shall obtain approval from Purchaser before procurement of primer/paint etc. and shall obtain approval from site in sealed and unopened condition for inspection and approval of Purchaser for use of paints at site.

SURFACE PREPARATION

Before Blasting surface shall be cleaned thoroughly leaving it free of all scales, dust, grease, oil coating, moisture and other impurities with the help of brass wire brushes, sand paper, emery paper etc. Wherever required any weld metal etc. shall be ground off by grinding machine to get smooth polished surface. Heavy deposits of grease of oily matter if any shall be removed by suitable solvent wash before Blasting is undertaken.

1.4 BLASTING

1.4.1 Shot blasting shall be carried out to a surface finish of SA 2½ standard as per Swedish Standard SIS 055900-1967 or equivalent i.e., Blast cleaning to near white

metal cleanliness, until 95% of each element of surface area is free of all visible residues.

1.4.2 Before Blasting, the surfaces shall be cleaned thoroughly i.e. free from all scales, dust, grease, oil coating, moisture and other impurities. Any weld metal etc. shall be ground by grinding machine to get a smooth surface. Heavy deposit of greases of oily matter if any shall be removed by solvent wash.

1.4.3 Blast cleaning shall not be performed where dust can contaminate surfaces undergoing such cleaning or during humid weather conditions having humidity exceeding 85%.

1.4.4 AIR BLASTING CLEANING

a. The blast cleaning of the surfaces shall be done using abrasive media like Al_2O_3 particles, copper slag, or other standard media at a pressure of 7 kg/cm^2 at appropriate distance and angle depending on nozzle size maintaining constant velocity and pressure.
b. Compressed air shall be free from moisture and oil. The blasting nozzles should be venturi style with tungsten carbide or boron carbide as the materials for liners. Nozzles orifice may vary from 3/16" to ¾".
c. Maximum air supply pressure shall be maintained at the delivery nozzle is 7 kg/cm^2 (100 psi) during blasting operation.
d. On completion of blasting operation, the blasted surface shall be clean and free from any scale or rust and must show a grey white metallic luster. Primer shall be applied within 4 hours of surface preparation.
e. Blast cleaning shall not be done outdoors in bad weather without adequate protection or when there is dew on the metal which is to be cleaned. Surface profile shall be uniform to provide good key to the paint adhesion (i.e. 35 to 50 micron). If possible vacuum collector shall be installed for collecting the abrasives and recycling.

1.4.5 After blasting, the surface need to be cleaned by dry brush or by dry compressed air (free from moisture and oil) to remove dust deposits.

After surface preparation, the first coat of primer must be applied on dry surface by airless/conventional spray and as directed by Site Engineer. Delaying the primer application is not advisable beyond 2 hours if weather is dry and humidity level is less than 80% and if primer is applied within 4 hours, there is no need to provide inhibitor wash over the blasted surfaces if it is not possible to apply primer within 4 hours, then application of inhibitor is a

must. It is essential to preplan the activities to start the primer application immediately after blasting.

1.4.6 Blast cleaned surface should be inspected by using magnifier glass or surface profile for anchor patterns. Surface profile in blast cleaning should ideally be 50 to 70 microns (generally 1/3 of the total DFT).

1.4.7 Arrangements for inspection at various stages of work should be made available so that entire blasted area is accessible for inspection.

1.4.8 The thickness of plates used for tank shell is not uniform. This factor should be kept in mind blast cleaning to prevent damage for thinner plates. When carrying out blast cleaning on the shell and roof, the work shall always be done in such a manner with respect to the wind direction that the abrasive practices are blown away clear of the tank surface.

1.5 CLEANING

Abrasives or dirt particles and the other metals shall be removed from the shot blasted surface by means of clean soft brush or vacuum or compressed air (free from oil and moisture).

1.5.1 PRECAUTIONS TO BE TAKEN DURING PAINTING

1.5.2 Precautions to be taken during application of epoxy and polyurethane paints.

- Paint shall not be applied when temperature falls below 10°C or rises above 50°C and when relative humidity rises above 90%. Do not apply during rain, fog or mist.
- Use all the mixed paints within the stipulated pot life period indicated by the manufacturer.

1.5.3 Precautions to be taken during application of Inorganic Zinc Ethyl Silicate Primer

- The coating must be fully cured and free from residual solvents before over coating, which normally takes 24 hours but time may be extended if relative humidity is below 80%. While over coating, it is desirable to apply a mist coat first to avoid bubbing problem which appears due to air entrapment.

1.6 MARKET EQUIVALENT OF DIFFERENT PAINTS

Name of Paint	Berger	Bombay Paints	CDC	Grand Polycoats	Jenson & Nicolson	Asian Paints	Shalimar	Coromandel Prodorite
Zince ethyl silicate - P1	Zinc Anode 304	Hempel Galvosil 1570	CDC Zince 11	GP Prime 402		APCOSIL 605 ZS		
Epoxy zinc Phosphate primer P2	Epliux 13 HB	Pentadur 8530	-	GP Prime 201 HB	Epilac Zinc Phosphate Primer	APCODUR HB	Epiguard 4	COROCRETIN - ZNP
High build Epoxy MIO (U1)	Epliux - 4 HB Mi0	Pentadur HB Mi0 5567	-	GP Guard MIO 233	Epilac HB Mi0 1 - 23	APCODUR EPOXY MIO	Epigard - 5	
Aliphatic polyurethane Finish Paint (F1)	Bergerthane enamel	Pentathene 4510	CDC 134 Finish	GP Bond 141	J & N 993 HB	APCOTHANE CF 673	Shalithane Finish	COROLAC - UP
Coal tar Epoxy (F3)	Epilux 555 Coal Tar Epoxy High Build	PENTADUR 6518	CDC MASTIC 14	GP Guard CE -232	Eplilac solvent Less coal tar epoxy coating	APCODUR CF 655	Bipigard 580 H.B. Black	COROCRETIN -TE
Epoxy - based tank liner (L1)	Epilux 78 HB TL	Pentadur FP 4535	CDC 187	GP Guard 234 A	Eplac 976	APCODUR CF 699	Epigard - TL-BH 533	COROCRETIN --UBS

1.7 INSPECTION FORMAT DURING PAINT APPLICATION

Surface preparation adopted	
Type of primer used	
Method of application	
Date and time of application	
Whether condition prevailing on the day of application (temp., humidity, rainy, sunshine)	
DFT measured (24 hour later)	
Method of application	
Date of time of application	
Whether condition on the day of application	
DFT measured	
Type of subsequent paint	
Method of application	
Date and time of application	
Whether condition on the day providing and fixing application	

Painting Specification

0	07-05-2022	For Initial Approval	DR	AP	SKJ	
Rev	**Date**	**Description**	**Prepared**	**Reviewed**	**Approved**	**Client Review**

Tank Painting Specification			
Description		**Surface Preparation**	**Minimum Requirement for ATF Tanks**
Shell / Roof / Bottom	Inside	Blasting with Iron Grits Surface Finish SA 2.5	Primer - Inorganic zinc ethyl silicate of DFT 65 -75 micron Intermediate Coat - Epoxy zinc phosphate DFT 35-40 micron Finish - Amine product cured HB epoxy liner 2 coats of DFT 100-125 micron each coat. Total DFT of paint shall be minimum 300 micron minimum. The painting test must pass the adhesiveness test such as tape test and MIBK test
	Outside (Except Bottom Soil side)	Blasting with Iron Grits Surface Finish SA 2.5	External Tie coat- One coat Primer of tie coat (Epoxy resin reinforced with aluminum and micacious iron oxide of DFT 100-150 micron) Finish Coat - Two coats of two pack aliphatic isocynate polyurethane 30-40 micron. IS 220 Olive green. Total DFT 200 Micron.
Bottom	Soil side	Blasting With Iron Grits Surface Finish SA 2.5	Primer - Inorganic zinc ethyl silicate of DFT 65 -75 micron Intermediate Coat - Epoxy zinc phosphate DFT 35-40 micron Finish - Coal Tar Epoxy, 2 Coats, 100 Microns Each
Hand Rail, Walk Way, Ladder, Platform Etc.		Blasting With Iron Grits Surface Finish SA 2.5 or Mechanical	Primer - Epoxy Zinc Phosphate 2 Coats, 30 Microns Each Two Pack Finish -Two coats of two pack aliphatic isocynate polyurethane 30-40 micron. IS 220 Olive green. Total DFT 200 Micron.
Piping			
ATF Piping	Inside	Factory Coating	Factory internal epoxy coating
	Outside	Blasting With Iron Grits Surface Finish SA 2.5	Primer - 1 coat of Heat resistant silicone Aluminum Paint suitable up to 100 Deg. C dry temperature (65-75 Micron DFT) Finish - 2 coat of Heat resistant silicone Aluminum Paint suitable up to 100 Deg. C dry temperature (35-45 Micron DFT)
Fire Water Piping	Outside	Blasting With Iron Grits Surface Finish SA 2.5	Primer - 1 Coat of Epoxy zinc Phosphate (65-75 Micron DFT) Finish - 2 Coat of Epoxy High Build Finish Paint (Two pack Polyamide / polyamine cured epoxy resin medium suitably pigmented) Flame Red (RAL No. 3000) Color Band Crimson Red (RAL No. 3007)

SPECIFICATIONS OF STORAGE TANKS

Rev	Date	Description	Prepared	Reviewed	Approved	Client Review
0	09-05-2022	For Tender	DR	AP	SKJ	

Contents

1.0 SCOPE:

This specification covers the general requirement for supply, fabrication, workmanship, erection, inspection testing and calibration of Storage Tanks including but not limited to the minimum requirements of the applicable codes and standards.

2.0 CODES AND STANDARDS

The following codes and standards having latest edition shall form design, fabrication, inspection, testing, calibration and acceptance of storage tank for the Project.

i. Statutory requirement specified by IATA, JIG, DGCA, PESO, PNGRB and other agencies that have laid down basic parameters for handling of ATF at airports.
ii. Tank design – API 650.
iii. Vent for Atmospheric Tank (Vapor relieving system – API 2000).
iv. Steel Pipe – API Specification 5B for petroleum.
v. Pipe Flange - ASME B 16.5.
vi. Fire Protection Facilities – IP-19 / NFPA 30.
vii. Sprinkler system – NFPA 13.
viii. Fixed water spray system – NFPA-15.
ix. Inter distances between facilities – PESO, PNGRB & NFPA 30.
x. Fire water and Foam system – NFPA 11, 30 and IP Part 19.
xi. Internal Protective coating system used in Aviation fueling systems – EI 1541.
xii. Product Pipe lines – ANSI B31.3, API.
xiii. Valves – API, BS.
xiv. Electrical Installation – API RP 500 (Class 1, Division 1 & Division 2).
xv. Electrical & Instrumentation – IEC, IEEE, NFPA 70, API 651.
xvi. Hazard Area Classification – API RP 505 (Zone 1 & Zone 2).
xvii. All other applicable statutory guidelines.

3.0 ERECTION & FABRICATION

3.1 The scope of work under erection and fabrication services of the contract shall include supply of all materials required for the entire work. It also includes supply, transportation, fabrication, erection, alignment, welding, testing, painting and commissioning of all appurtenances and accessories and other instruments as specified in the tender documents, final cleaning, supplying and application of primers and paints as required.

3.2 The fabrication and erection works shall be carried out by HYDRAULIC JACKING METHOD i.e. manual erection of first 2/3 shells and roof plates to facilitate

installation of jacks for hoisting the steel tank in accordance with tender specifications and drawings to be prepared and furnished by contractor for CLIENT / OWNER's approval before commencement of work.

3.3 Since construction of tank pad foundations is in contractor's scope of work, he shall himself check & satisfy the evenness of levels within acceptable tolerance of the foundations before commencement of tank fabrication. Any defect in the tank found at a later date due to defective sand pad foundation shall be solely attributed to the contractor.

3.4 Underside surface of bottom plates for tanks shall be Sand blasted to SA 2 1/2 and painted as per specifications, before plates are laid on the sand pad foundation.

3.5 Required gaskets, studs, bolts and washers are required to be supplied by contractors at their own cost wherever fastening by bolts is required to be carried out.

3.6 The edge preparation of plates shall be done using Pug Cutting Machine only.

3.7 Shell plates shall be shaped by power operated rolling machine to exactly suit the curvature of the tank under fabrication. Rolled plates shall be either stacked vertically on longer edge or on properly designed stackers having radius equal to that of the tank for which the plates have been rolled, so as to avoid damage to plate curvature.

3.8 Unless otherwise specified by CLIENT / OWNER, painting shall be carried out as per specifications.

3.9 All roof structural members, stairways, hand railings etc. shall be blast cleaned and made free from rust and scale & painted as per enclosed specifications.

3.10 All machined surfaces of plate edges adjacent to welded joints, bolts and nuts shall be left unpainted and coated with an approved corrosion inhibitor in a petroleum base before dispatch

3.11 The suitability and capacity of all plants and equipment used for erection shall be to the satisfaction of the Site Engineer/ Engineer-in-Charge. All structural steel should be so stored & handled at the site that the members are not subjected to excessive stresses and damage.

3.12 During erection, the steel work shall be securely bolted or otherwise fastened and wherever necessary properly braced to provide for all loads to be carried by the structure during erection including load of equipment.

3.13 No permanent bolting or welding should be done until proper alignment is obtained.

4.0 LIST OF STRUCTURALS AND APPURTENANCES FOR TANKS STRUCTURALS:

4.1 The structure for the fixed roof and tanks include Roof central drum, trusses, girders, rafters (Main, secondary, tertiary), main central and secondary columns (in case of column supported tanks), curb angles, roof handrail at the top, spiral staircase with hand rails, mid landings and top landing platforms.

4.2 For CR tanks, supply of Structural & appurtenances include trusses, central drum, girders, rafters, kerb angles, hand railing on tank top, spiral staircase with railing, landing platforms, appurtenances such as hinged type shell manholes, inlet and outlet nozzles, water draw off sump, water draw off nozzle including pipe, temperature nozzle with hatch, dip pipe with hatch, nozzle with hatch for central dipping, roof vents, Emergency Vents roof manholes, pad plates for all openings in shell and roof (except roof/shell manholes & nozzles), thermal expansion relief nozzles with required length of heavy duty ASTM A 106 pipe from bottom to top of the tank outside & up to bottom inside the tank and flanged gate/ NR valves, painters hooks, tank history plate, structure for wind girders (including railing, stiffeners, rain water pipe etc.), base plate, splice plate, cleats, earthing boss with bolts, etc.

4.3 It also includes supply & fixing of all attachments fasteners such as studs, nuts, washers & Non asbestos/ Spiral Wound metallic gaskets at contractors cost. Contractor will also fix the Gate valves/ GOVs/ MOVs. The contractor will supply and fix gaskets, nuts, studs, washers etc. on inlet, outlet and water draw off line.

4.4 Structural members & supports for wind girders including extended well near staircase shall include angles, channels, girders, stiffeners, pipe railing, rain water pipe etc. Item also includes provision of one no. through manhole on each tank for fixing tank float level gauge by the tank gauging supplier. Also, the contractor shall provide shall need to provide nozzles at for the purpose of fixing tank level gauges including supports on the tanks. The contractor shall coordinate with tank gauging supplier for these jobs accordingly.

4.5 Any other structure or appurtenance as required to complete the tank fabrication work as per standard drawings and specifications but not mentioned above will also be supplied and fabricated by contractor without any additional cost to CLIENT / OWNER.

5.0 WELDING

5.1 Tanks and their structural attachments shall be welded by the Metal Arc process. The welding may be performed on manual/automatic or semi-automatic mode using suitable equipment.

5.2 The welding sequence for tack welding and final welding of the bottom, shell and roof plates shall be such so as to minimize the distortion due to welding shrinkage and it shall be as per standard drawing or any other method as deemed suitable by the contractor who may also submit his own welding sequence and may use it after its approval by Engineer-in-Charge.

5.3 Welding shall not be carried out when the surfaces of the parts to be welded are wet from any causes and during periods of rain and high winds unless the welder and work are properly shielded.

5.4 Electrodes shall be stored in dry places in their original packets or cartons. Preheating of electrodes shall be provided as per AWS requirements.

5.5 Tack welds used in the assembly of circumferential and vertical joints of tank shells, and those used for assembling the shell to the bottom shall be removed and surface grinded properly and gaps filled with weld metal.

5.6 Welder performance qualification shall be carried out as per API-650 Section 7 Welding Procedure and Welder Qualification' or ASME Boiler & pressure Vessels Code Sec. IX. Welders shall be qualified in the approved procedure as per the code requirements. The qualification test shall be arranged by contractor at his cost and witnessed by Site Engineer/ Engineer-In-Charge / inspection agency. IS:823 should also be referred in the matter.

5.7 Welder test certificate is treated invalid if he has not done any welding for continuous six months. Fresh certificate is to be obtained before carrying out welding again by him.

5.8 All longitudinal and circumferential shell joints shall be of full penetration, full fusion, double welded butt welds using any of edge preparations profile permitted by codes.

6.0 TANK CALIBRATION

6.1 Coordination with concerned authority including payment of calibration fee and professional/other expenses is in contractor scope.

6.2 Temporary scaffolding, with steel structural of safe design, shall be erected around the tank to ensure safety of the workers during strapping of the tank.

6.3 Tested water meters and hoses shall be arranged for physical calibration of tank bottom up to datum plate level.

6.4 labour & equipment for calibration shall be arranged by the contractor at their own cost.

6.5 After calibration is carried out, scaffolding materials shall be retained till completion of painting & thereafter can be dismantled and removed from site immediately.

6.6 After calibration, the water shall be drained out and the bottom, shell from inside, steel structures underside of roof shall be cleaned properly and manhole covers to be fixed properly including replacing the gaskets etc. wherever necessary as directed by Site Engineer.

6.7 Preparation and submission of calibration charts in triplicate duly approved by concerned calibrating authorities is in contractor scope. One set of charts shall be submitted duly laminated and balance two in file covers.

7.0 ACCEPTANCES

7.1 Before handing over the tank to the CLIENT / OWNER, the contractor shall ensure following:

7.2 The tank bottom and roof should be in specified uniform slope after hydrostatic test of the tanks.

7.3 In case, where bottom is not having reasonably uniform slope, the contractor will have to find out the reasons for the defect and bring the bottom plates to desired slope at no extra cost to CLIENT / OWNER.

7.4 Similarly, deformities in roof plates shall be rectified to bring the roof plates in desired uniform specified slope at no extra cost to CLIENT / OWNER.

7.5 The shell should be in plumb. Maximum acceptable limit for out of plumb-ness of tank shell is 1/200 of the tank height, beyond which repairs to be carried out at contractors cost without any cost to the CLIENT / OWNER.

7.6 Tank earthing shall be tested with 3-point Megger to give acceptable earth resistance of less than 1 Ohms. Certificate from licensed electrical contractor is to be submitted to this effect.

A. SPECIFICATIONS FOR FABRICATION, ERECTION, WELDING OF VERTICAL STORAGE TANKS

MATERIAL SPECIFICATIONS

1.0 STEEL PLATES

1.1 Plates shall conform to IS: 2062 GR. B Fully subject to stipulations provided in IS: 803.

2.0 STRUCTURAL SECTIONS

2.1 Structural steel will conform to IS: 808 latest Edition.

2.2 Structural steel will be of approved make.

2.3 Sectional weight will be considered for payment purposes.

3.0 WELDING ELECTRODES

3.1 Electrodes shall be stored in dry places in their original packets or cartons. Preheating of electrodes shall be provided as per AWS requirements.

4.0 CODE OF PRACTICE

4.1 The fabrication, erection and welding of the tanks shall generally conform to directional enclosed drawings, latest edition of API-650 and IS:803 (code of practice for design, fabrication and erection of vertical mild steel cylindrical welded oil storage tanks)

4.2 Constructional tolerances, for various items, shall not exceed beyond permissible limits in the above codes.

5.0 WELDING REQUIREMENTS IN TANK FABRICATION

5.1WELDING

5.1.1 Welding of steel plates and related accessories shall be carried out conforming to the requirements of various paragraph in this chapter.

5.2 WELDING RESPONSIBILITY

5.2.1 The contractor is responsible for the welding done by welders employed by him. Engineer-In-Charge shall conduct the tests required to qualify welding procedures,

and to qualify the welders and if, necessary re-qualify welders and welding operators.

5.3 WELDING QUALIFICATIONS

5.3.1 **QUALIFICATION REQUIREMENTS:** Qualification of the welding procedures to be used and of the performance of welders and welding operators shall conform to the requirements of the ASME Section IX.

5.3.2 **PROCEDURE QUALIFICATION BY OTHERS:** Engineer-In-Charge is responsible for qualifying any welding procedure that will be used. Welding procedures qualified by others may be used, subject to the specific approval of the Engineer-in-Charge / Inspector provided that the following conditions are met.

a) The proposed Welding Procedure Specification (WPS) has been prepared, qualified and executed by responsible, recognized organization with expertise in the field of welding and

b) The Contractor has not made any change in the welding procedure.

5.3.3 The impact testing is generally not required.

5.3.4 The material is to be welded are in the thickness range between 5 mm to 40 mm. Therefore, Post weld heat treatment is not required.

5.3.5 The design pressure is atmospheric, and the design temperature Is in the range -4 deg C to 50 deg. C

5.3.6 The contractor accepts written responsibility for both i.e. the Welding Procedure Specifications (WPS) and the Procedure Qualification Record (PQR).

5.3.7 The contractor has at least currently employed welder or welding operator, who have met with the following requirements.

While in employment, the welder has satisfactorily passed a performance qualification test using the procedure and the P-Number material specified in the WPS.

a) The performance bend test required by ASME Section IX QW-302 shall be used for this purpose

5.4 PERFORMANCE QUALIFICATION BY OTHERS

5.4.1 Site Engineer may accept a performance qualification made by certified agencies with the specific approval of the Engineer-In-Charge.

5.4.2 The Contractor shall obtain a copy from the certified agencies of the performance qualification test record & submit the same to Engineer-In-Charge with specific recommendation & approval of Inspector with the following details.

i. The name of the agency & name of the welder or welding operator
ii. The procedure identification.
iii. The date of successful qualification.
iv. The data that Individual last used the procedure on tank fabrication.

5.5 QUALIFICATION RECORD

5.5.1 The Contractor shall maintain a self-certified record, available to the Engineer-In-Charge and the Inspector. The records will have the following details:

a) The procedure used.
b) The welders and welding operators employed showing the date and results of procedure and performance qualifications
c) The identification symbol assigned to each welder and welding operator.

5.6 WELDING MATERIALS

5.6.1 FILLER METAL

a) Filler metal shall conform to the requirements of ASME Section IX.
b) A filler metal, not yet incorporated in ASME Section IX may be used with CLIENT / OWNER approval, if a procedure qualification test is first successfully made

5.7 PREPARATION FOR WELDING

5.9.1 CLEANING

a) Internal and external surfaces to be thermally cut or welded shall be clean.
b) They will be free from paint oil rust scale and other material that would be detrimental to either the weld or the base metal when heat is applied.

5.9.2 END PREPARATION

a) End preparation is acceptable only if the surface is reasonably smooth and true, and slag from oxygen or arc cutting is cleaned from thermally cut surfaces.
b) Dis-coloration remaining on a thermally cut surface is not considered detrimental oxidation.
c) End preparation, for groove welds specified in ASME or as specified, which meets the WPS is acceptable.

5.8 ALIGNMENT

5.8.1 CIRCUMFERENTIAL WELDS

a) Inside surface of steel plate ends to be joined shall be aligned within the dimensional limits in the WPS and the engineering design.

b) If the external surfaces of the steel plates are not aligned, the weld shall be tapered between them.

5.9 WELDING REQUIREMENTS

5.9.1 WELDS: Welds including addition of weld metal for alignment shall be made in accordance with a qualified procedure and by qualified welders or welding operators

5.9.2 WELDER'S IDENTIFICATION SYMBOL: Each qualified welder and welding operator shall be assigned an identification symbol.

a) Unless otherwise specified in the engineering design, each weld or adjacent area shall be marked with the identification symbol of the welder or welding operator.

b) In addition of marking the weld, appropriate records shall be maintained.

5.9.3 TACK WELDS

a) Tack welds at the root of the joint shall be made with filler equivalent to that to be used in the root pass.

b) Tack welds shall be made by a qualified welder or welding operator.

c) Tack welds shall be fused with the root pass weld, except that those which have cracked shall be removed. Bridge tacks (above the weld) shall be removed.

5.9.4 **PEENING:** Peening is prohibited on the root pass and final pass of a weld.

5.9.5 CLIMATIC CONDITIONS: No welding shall be done if there is impingement on the weld area, of rain, snow, sleet or excessive wind or if the weld area is frosted or wet.

5.9.6 FILLET AND SOCKET WELDS: Fillet welds, including socket welds, may vary from convex to concave. The size of a fillet weld shall be as per engineering design.

5.9.7 SEAL WELDS: Seal welding shall be done by a qualified welder. Seal welds shall cover all exposed threads.

B. RADIOGRAPHIC INSPECTION PROCEDURE OF VERTICAL TANKS

1.0 RADIOGRAPHIC INSPECTION:

Radiographic inspection of weld joints of vertical tanks shall be conducted as per latest API 650, generally as per following details:

1.1 JOINTS REQUIRING RADIOGRAPHY

1.1.1 Tank shell butt welds

1.1.2 Tank bottom annular plate butt welds

1.1.3 All 'T' joints in Shell irrespective of plate thickness. Each film shall clearly show not less than 50 MM of weld length on each side of vertical intersection and 150 MM along the vertical weld.

1.1.4 Butt weld of bottom sump.

1.1.5 Shell joints covered by reinforcement pad plate.

2.0 NUMBER AND LOCATIONS OF RADIOGRAPHS

VERTICAL JOINTS

2.1 TANKS HAVING PLATE THICKNESS UP TO 10 MM OR LESS

2.1.1 One spot radiograph shall be taken in the first 3 m of completed vertical joint of each type and thickness welded by each welder.

2.1.2 Thereafter, without regard to number of welders, one additional spot radiograph shall be taken in each additional 30 M and any remaining fraction of vertical joint of the same type and thickness.

2.1.3 In addition to the above requirements, one random spot radiograph shall be taken in each vertical joint in the lowest course of the tank. The spot radiographs already taken on the lowest course may be used to meet this requirement.

2.1.4 In addition, junctions of all vertical & horizontal joints (Tee Joints) shall be radio-graphed.

2.2 TANKS HAVING PLATE THICKNESS GREATER THAN 10 MM AND UP TO AND INCLUDING 25 MM

2.2.1 Spot radiographs shall be taken as per 2.1 above.

2.2.2 In addition, two spot radiographs shall be taken in each vertical joint of lowest course of the tank. One of the radiograph will be as close to the bottom as practicable and other shall be taken at random.

2.3 TANKS HAVING PLATE THICKNESS GREATER THAN 25 MM AND UP TO AND INCLUDING 40 MM

2.3.1 For plate thickness up to 25 MM, spot radiographs shall be taken as per details given in 2.1 & 2.2 above.

2.3.2 In addition, all vertical joints in plate thickness in the range of more than 25 mm and up to and including 40 mm shall be fully radio-graphed.

HORIZONTAL JOINTS

2.4 One spot radiograph shall be taken in the first 3 M of completed horizontal butt joint of the same type and thickness without regard to number of welders.

2.4.1 Thereafter, one radiograph shall be taken in each 60 M and any remaining fraction of horizontal joint of the same type and thickness.

2.4.2 No. of such radiographs should exclude junctions of vertical & horizontal seams.

2.5 BOTTOM ANNULAR PLATE BUTT JOINT

2.5.1 For single butt welded joint using backing up strip, one spot radiograph shall be taken on 50% of radial joints. Location of radiographs shall be preferably at the outer edge where shell plate joins the annular plate. The minimum length of the radiograph shall be 150 MM. Extra care should be exercised to interpret such radiographs.

2.6 GAUGE PIPE & PAD PLATE

2.6.1 100% radiograph of gauge pipe and gauge well in FR tank.

2.6.2 100% radiograph of vertical and horizontal joints, where pad plate fouls.

2.7 REMARKS

2.7.1 For the purpose of radiography, plates shall be considered of the same thickness when difference in specified or design thickness does not exceed 0.85 mm.

2.7.2 When two or more tanks are erected in the same terminal/depot, the number of spot radiographs to be taken should be based on meterage of the welds of the same type and thickness in each individual tank rather than aggregate meterage of welds of all tanks.

2.7.3 It is permissible to inspect the work of two welders with one spot radiograph, if they weld opposite sides of the same butt joint. In the event of rejection of a spot radiograph, further spot radiographs shall be used to determine whether one or both welders were at fault.

2.7.4 As far as possible, an equal number of spot radiographs shall be taken from the work of each welder, except that this requirement does not apply where length

of joints welded by welder is much less than average in comparison with other welders.

2.7.5 Radiographs shall be taken as soon as practicable during process of welding. The number and locations of radiographs should be pre-determined as per guidelines mentioned above.

2.7.6 Each radiograph shall clearly show a minimum of 150 MM of weld length and 50 MM on either side from the center line of the weld. Hence each film should show minimum radiograph of 150 x 100 MM of selected weld. The film shall be centered on the weld and shall be of sufficient width to permit adequate space for the location of identification works and a thickness gauge.

3.0 EXAMINATION OF RADIOGRAPHS

3.1 The radiographic examination method employed shall be in accordance with the ASME Boiler and Pressure Vessel Code Section V "Non-Destructive Examination" Article 2

3.2 The requirements of Article 2, Section V of ASME code are to be used only as a guide. However, final acceptance of radiographs shall be based on the ability to see the prescribed penetra meter image and the specified hole. Contractor will engage minimum one L-2 inspector at site for interpretation of radiographs which in-turn will be submitted to CLIENT / OWNER's M&I dept. for final interpretation.

3.3 The acceptability of welds examined by radiography shall be judged by the standards in Section VIII, Division 1, Paragraph UW-51 (b), of the ASME code.

4.0 DETERMINATION OF LIMITS OF DEFECTIVE WELDING

4.1 When a section of weld is shown by radiograph to be unacceptable under provisions given above or limits of the deficient welding are not defined by the radiograph, two adjacent spots shall be examined by radiography.

4.2 However, if the original radiograph shows at least 75 MM of acceptable weld between the defect and any one edge of the film, an additional radiograph need not be taken of the weld on that side of the defect.

4.3 If the weld at either side of two adjacent sections fails to comply with the requirements of relevant standards, additional nearby spots shall be examined until the limits of acceptable welding are determined or the fabricator may replace all the welding performed by the welder on that joint.

4.4 If any of these additional spots fails to comply with the requirements of relevant standards, the limits of unacceptable welding shall be determined as specified for the initial section

5.0 REPAIR OF DEFECTIVE WELDS

5.1 The defective weld shall be removed by chipping or melting out by thermal gouging process from both sides of joint and re welding. Only sufficient cutting out of the defective joints, as is necessary to correct the defect, is required.

5.2 All repaired weld in joints shall be checked by repeating the original inspection procedure and by repeating the hydrostatic testing / vacuum box testing method.

6.0 RECORD OF RADIOGRAPHIC EXAMINATION

6.1 The fabricator shall make a record consisting of all films with their identification marks on a developed shell - plate diagram.

6.2 After completion of tanks, the films shall be handed over to CLIENT / OWNER GROUP.

C. TESTING PROCEDURE OF VERTICAL CONE ROOF TANK

1.0 GENERAL

1.1 Initial reduced levels of Sand Pad foundation top, bottom plate top at minimum 8 points on periphery @ 45 degree apart.

1.2 Plate thickness checking for all plates at minimum 6 random points on each plate using ultrasonic gauge.

1.3 Initial levels of tank bottom before Hydrostatic testing of tank and after full erection of tank & transfer of load to SPF at above 8 points after every 1 m. Increase in water level.

1.4 Verticality test for tanks @ 3 m c/c on tank periphery.

1.5 Reinforcement pads for shell manhole, nozzles to be tested with pneumatic pressure of 1 kg./sq.cm through tell-tale holes. After testing, the tell-tale hole shall be plugged with threaded stud and shall not be sealed.

2.0 TANK BOTTOM TESTING

2.1 WATER DRAW OFF SUMP

2.1.1 Fabricate sump as per drawing.

2.1.2 Radiograph the butt weld of the sump

2.1.3 Place the bottom plate on the ground. Invert the sump on the bottom plate and weld with it. (Carry out DP test of the fillet joint after root run

2.1.4 Create pneumatic/ hydraulic pressure of 2 kg per sq.cm inside the sump after providing nozzles (two) on the bottom plate.

2.1.5 Repair the defective welds and repeat test till entire satisfaction

2.1.6 Cut the bottom plate at the sump as per requirement.

2.1.7 Weld the bottom to sump collar and carry out root DYE PENETRATION (DP) Test.

2.2 ANNULAR PLATE BUTT WELDS

3.1.1 RADIOGRAPHY: Radiography as per details given in this tender schedule for single welded butt joints with back up bar, one spot radiograph shall be taken on 50% of radial joints as near to periphery as possible.

3.1.2 PNEUMATIC PRESSURE / VACUUM BOX TEST BEFORE ERECTION OF FIRST STRAKE OF SHELL

a. Complete all annular plate radial butt welds for at least 800 mm length from outer edge of tank bottom towards tank center.
b. For tanks without annular plates, 800 mm length of sketch plate joints to be welded as described above.
c. Conduct vacuum box test of the above joints at 3 PSI vacuum.
d. Repair the defective welds and repeat test till fully successful.

3.1.3 BOTTOM PLATE LAP WELDS

a. In case of erection by conventional method, complete welding of all bottom seams. Erect at least lowest (1st) course of shell plates and 2nd course of shell plates. In case of erection by jacking method complete welding of bottom seams after full erection and tack welding of the lowest course to bottom plate.
b. Testing of bottom plate lap welds should be done only by vacuum box method of testing by creating a vacuum of 3 pounds per square inch on the welds seams under test.

c. In addition, all bottom plates including weld joints shall have thorough visual inspection for pin holes, inadequate weld size, improper reinforcement, undercutting etc.

3.0 SHELL TESTING

3.1 FILLET WELD - 1st STRAKE PLATE TO BOTTOM PLATE

3.1.1 Complete shell to bottom fillet weld from inside periphery of tank bottom.

3.1.2 Check visually for craters cracks or other surface cracks. Check that undercutting of base metal does not exceed 0.4 mm

3.1.3 Conduct CHALK-KEROSENE test by injecting kerosene from outer periphery un welded joint and applying chalk on inside fillet weld

3.1.4 Rectify the defective weld and repeat the test till entire satisfaction

3.1.5 Complete the outer periphery fillet weld and check it visually as per API-650.

3.2 SHELL APPURTENANCE - REINFORCEMENT PLATES TO SHELL PLATES WELDS

3.2.1 Make 6 mm dia. screw threaded TELL TALE hole in the reinforcement pads before its welding to shell and shell appurtenances.

3.2.2 The reinforcement pads shall be tested by applying up to 15 pounds per square inch gauge pneumatic pressure between the tank shell & the reinforcement plates on each opening using TELL TALE hole.

3.2.3 Use soap suds on welds between reinforcement plate to shell, reinforcement plate to appurtenances and appurtenances to shell plate welds

3.2.4 Repair the defective weld and repeat the test till entire satisfaction. 3.2.5 Close the tell-tale hole with a bolt or screw.

3.3 SHELL PLATE BUTT JOINTS RADIOGRAPHY

3.3.1 Prepare shell plate development diagram.

3.3.2 Mark locations for spot radiographs as per guide lines detailed in this tender schedule

3.3.3 Conduct spot radiography.

3.3.4 Get the radiographs interpreted and repair the defective welds.

3.3.5 Conduct radiography of repaired welds.

3.3.6 Repeat till satisfactory results are obtained.

3.4 SPOT RADIOGRAPHY SHOULD BE CONDUCTED CONCURRENTLY DURING ERECTION AND WELDING OF SHELL PLATES.

4.0 HYDROSTATIC TESTING

4.1 Weld the permanent "BENCH MARKS" on the tank shell approximately 300 mm above the bottom plate at minimum eight places @ 45 degree apart along periphery.

4.2 Take initial levels on these bench marks.

4.3 Commence filling water @ 1 m water column per day in the tank for a height up to 4 mtrs.

4.4 In case differential settlement between two consecutive points is less than 5 mm then increase water filling rate @ 2 m water column per day.

4.5 Fill water up to top leg of top curb angle.

4.6 Hammer the shell joints. Sweating from any joints will be an evidence for leak.

4.7 Repair the defective weld & repeat test till satisfaction.

4.8 Upon satisfactory completion of hydrostatic test, dewatering process may be commenced @ the rate of 2 m to 3 m water column per day.

5.0 TESTING OF ROOF

5.1 CONE ROOF

5.1.1 Test roof in accordance with any of API-650 recommendations i.e. apply internal pneumatic pressure not exceeding weight of roof plates and check for leakage by soap solution. Alternatively, roof seams may also be tested by vacuum box test.

5.1.2 Internal pneumatic pressure, not exceeding weight of roof plates, works out to be 40 mm of water gauge. Hence testing roof should be done at 40 mm of water gauge only

5.1.3 Commence dewatering of tank.

5.1.4 Clean the tank from inside and check positions of column bases. Ensure that column bases are in perfect contact with bottom plates

5.1.5 Record levels of points on bottom plates and levels of tank periphery.

5.1.6 Compare the final levels with the original levels & analyze the findings in view of the consultant's recommendations.

5.1.7 In case of variation in final levels and original levels is more than anticipated, report matter to Competent Authority for further guidance.

ANNEXURE - 1
TANK DATASHEET

0	09-05-2022	For Initial Approval	DR	AP	SKJ	
Rev	**Date**	**Description**	**Prepared**	**Reviewed**	**Approved**	**Client Review**

API 650 STORAGE TANK DATA SHEET		
GENERAŁ INFORMATION (TO BE COMPLETED BY EMPLOYER)		
	Date	
	By	
	Doc No	
	Page	
1	Purchaser / Agent	DAFFPL
	Address	
	Phone	
2	User	Fuel Concessionaire
3	Erection Site	Delhi Aviation Fuel Farm Pvt Ltd., Delhi.
4	Tank No	VF 207
	Maximum Capacity (m3)	To overfill level (OFL) as per API 2350 (where overfill level is lowest of any of overkill slot (if fitted – not required for this tank, curb level, any other tank damage or spill level) and includes a bottoms figure (1:30 slope) All the above numbers shall be re-validated by the contractor.
	Net Working Capacity	-------
	Overfill protection (API-2350)	As advised above in “maximum capacity”
5	Pumping rates (in) (Existing)	10000 litres per minute
	Pumping rates (out) (Existing)	45833 litres per minute
6	Maximum operating temperature	90 deg C
7	Product stored	Jet A-1
	Design Specific gravity at 15 deg C	0.84
	Design metal temperature deg C	As for Delhi conditions (obtain lowest one-day mean temperature from the Indian weather office).
	Vapor pressure kPa	3.5 kPa at 40 deg C
8	Corrosion allowance shell (outside/inside) (mm)	1.6 / 1.6 (but consistent with meeting the design life requirements)
	Corrosion allowance roof	1.6 / 1.6 (but consistent with meeting the

	(outside/inside) (mm)	design life requirements)
	Corrosion allowance floor (outside/inside) (mm)	1.6 / 1.6 (but consistent with meeting the design life requirements) (note 10 mm total floor thickness (minimum) has been specified)
	Corrosion allowance structural (each exposed major face) (mm)	1.6 / 1.6 (but consistent with meeting the design life requirements)
9	Shell Design	Basic standard API 650
	Design pressure	+ weight of roof plates / - one inch water gauge, unless Indian law mandated gauge design requires additional pressure and vacuum considerations
10	Roof Design	Basic Standard 650 (fixed roof, but supporting truss (if any) not to dip into product)
	Frangible roof joint	Yes
	Roof design information — uniform live load	1.2 kPa or greater figure if required by Code requirement Indian Standards
11	Roof design information - special loads	Nil
	Roof design information - insulationload	Nil
	Roof design information — maximum design roof temperature	90 deg C
	Roof design information — gases in roof space	Air with minimal hydrocarbon vapour — 3.5 kPa partial pressure (typically)
12	Earthquake Design	As required for Delhi.
	Earthquake Design — roof tie rods	The designer to determine if required
	Earthquake Design — seismic zone	As required for Delhi
	Earthquake Design — importance factor	Earthquake design according to location to be designed
	Earthquake Design — zone factor (table E-2)	Ditto
	Earthquake Design — site coefficient (table E-3)	Ditto
13	Wind load: - Velocity	As required for Delhi , IS 875: 2016
	Provide intermediate wind girder	Wind girders to only be fitted to outside of tank and cooling water for fire protection may need to be deflected around the wind girder

14	Environmental effects: Maximum rainfall, mm/hr	Will be provided to successful bidder
	Environmental effects: Total snow accumulation, mm	Nil
15	Size—Inner diameter	Diameter defined as 24 m
	Size —height	Height defined as 20 m
16	Foundation type	Concrete ring wall
	Remarks	Servo level gauge to be mounted on a stilling well. Stilling well to be mounted off the first strake (lowest strake)
CONSTRUCTION DETAILS (TO BE COMPLETED BY MANUFACTURER AND/OR EMPLOYER)		
1	Manufacturer	
	Address	
	Phone	
	Serial No	
2	Fabricator	
	Address	
	Phone	
	Serial No	
3	Material Specifications: Shell	
	Material Specifications: Roof	
	Material Specifications Bottom	
	Material Specifications: Structurals	
4	No. shell courses	
5	Plate width s and thicknesses (including corrosion allowance) (mm) [1]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [2]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [3]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [4]	
	Plate widths and thicknesses (includin g corrosion allowance) (mm) [5]	
	Plate widths and thicknesses (including	

	corrosion allowance) (mm) [6]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [7]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [8]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [9]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [10]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [1 1]	
	Plate widths and thicknesses (including corrosion allowance) (mm) [12]	
6	Tank Bottom: Plate thickness (mm)	Annular: mm Remainder: 10 mm (or greater)
	Tank floor welding (excluding annulars)	Lap Butt
7	Slope	1:30 (minimum) downwards to center
	Minimum width and thickness of bottom annular plates (3.5) mm	Annulars are required, are to be butt welded, are to be designed and to be not less than 10 mm thick. Thickness: Width:
8	Roof to shell detail (figure F-1)	Basic design
	Roof to shell detail (figure F-2)	Detailed
9	Intermediate wind girder?	Yes
	Top wind girder for use as walkway?	No
10	Roof type:	Supported
	Roof type:	Slope or radius: Cone roof, slope notto exceed 1 in 12
11	Roof plate —thickness mm)	
	Roof plate — welding	Lap I Butt Topside and underside of roof to be welded (seal welded to the underside). Roof plates to be underlapped to top surface
12	Paint — shell — exterior	Yes, blast preparation
	Paint — shell — interior	Yes, reviewed epoxy, entire shell, blast preparation. This to also include any

		internal carbon steel items such as the stilling well (inside and outside of the stilling well)
	Paint — bottom — underside	Blast and bituminous epoxy
	Paint — bottom — topside	As interior of shell
13	Structural steel	All exposed surfaces, as interior of shell. All interiors to be fully seal welded. Any "back to back" angle designs to have offset spaces so that all surfaces can be blasted and painted.
14	Inspection and test plan	To be developed and reviewed without objection. To comprise "control" and "hold" points. Material certificates, welding and painting will be subject to inspection
15	Weld examination	Radiography as required by API 650. Supplementary liquid penetrators as required, but for the floor to shell weld, ultrasonic and MPI are required.
16	Films	Property of the Fuel Concessionaire
17	Leak testing	Bottom (vacuum box), including floor to shell weld (angular vacuum box), roof (air pressure and soapy water); shell — hydrostatic test
18	Mill test reports	Required for plate
19	Purchaser's reference drawing	
20	Tank size — Internal diameter (m)	24
	Tank size (height) (m)	20
21	Date of standard 650 edition/revision	API 650, latest edition
	APPURTENANCES (TO BE COMPLE	TED BY MANUFACTURER AND/OR EMPLOYER)
1	Stairway style	Circular (maximum 45 degrees), with landings
2	Walkway	

3	Draw off sump	Special. Centre, no nozzles through the floor, no obstructions to water path – note detail in API 650 3.18 is NOT suitable. Sump not to have raised ledge at floor level. Sump to be constructed from welding cap (DN 600, pipe and shop welded into 12 mm plate which has been cut formed and welded to form 1:30 (or greater) cone.
4	Bolted door sheet	No
5	Scaffold hitch	Yes - “pad eye” to centre of roof, rated to 400 kg, davit points (with one removable davit arm) over each shell man way
6	Internal piping	Swinp line: No; Floating suction: Yes; Heating coil: No; swirl type diffuser for fill line comprising flanged elbow
7	Roof drain	Not applicable
8	No and size of shell manholes	2 off DN 600
9	No and size of roof manholes	2 off DN 600
10	Shell Nozzles	Note: All to be double flanged except for manholes

ANNEXURE - 02
DATA SHEET AND SPECIFICATION FOR FLOATING SUCTION

0	09-05-2022	Issued for Review	PR	AP	SKJ	
Rev	**Date**	**Description**	**Prepared**	**Reviewed**	**Approved**	**Client Review**

CONTENTS

A. SPECIFICATION FOR FLOATING SUCTION

1.0 GENERAL

1.1 SUMMARY

A. This specification applies to floating suction devices for vertical fuel tanks.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

A 105	-	Carbon Steel Forgings for Piping Applications
A 139	-	Electric-Fusion (Arc) - Welded Steel Pipe (NPS 4 and over)
A 234	-	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
G 158	-	Standard Guide for Three Methods of Assessing Buried Steel Tanks

B. American National Standards Institute (ANSI):

B 16.5	-	Pipe Flanges and Flanged Fittings
B 16.11	-	Forged Steel Fittings, Socket-Welding and Threaded
B 16.20	-	Metallic Gaskets for Pipe Flanges-Ring-Joint, Spiral-Would, and Jacketed
B 31.3	-	Chemical Plant and Petroleum Refinery Piping
B 36.10	-	Welded and Seamless Wrought Steel Pipe

C. American Petroleum Institute (API)

API 650	-	Welded Steel Tanks for Oil Storage
API 1540	-	Design, Construction, Operation and Maintenance of Aviation Fuelling Facilities
API RP 1604	-	Closure of Underground Petroleum Storage Tanks

2.0 PRODUCTS

2.1 DESIGN

A. The floating suctions have to be secured against damaging of the tank walls by appropriate means. Maximum movement angle: 60° - 80° depending upon arms. The maximum movement angle has to be fixed in an appropriate way.
B. The swivel device for the floating suction shall be a yoke-type or central-type swing joint with centered inlet and outlet and no offsets. The swing joints shall be supported off the tank shell or bottom.
C. The inlet of the floating suction pipe shall be realized by a 90° elbow, pointing downwards.
D. The inlet elbow shall be equipped with a vortex breaker designed also to act as a lower position stop for the floating suction arm.
E. When in lowest position the floating pipe must have a minimum slope of 0.5% towards the elbow.
F. For the layout of the float the following has to be observed:

    1. maximum flow rate
    2. specific density of the fluid medium
    3. all rotating parts have to be connected to protective ground

G. Traction cables for testing of the floating suction devices shall be provided.
H. The floating suction devices shall be equipped with position indicating instruments for monitoring of satisfactory functionality.
I. Note that the floating suctions must be electrically bonded to the tank shell (maximum electrical resistance 106 Ohm).
J. Floats shall be designed in respect of the total weight of the floating suction device. Floats shall be of stainless steel and must be pressure tested at 2 bar test pressure.
K. Arm shall be electrically bonded with jumpers across flanges.
L. Arm shall have provision of air breather to remove air.
M. 3-level sample arrangement and its clamps.

3.0 MATERIALS

3.1 MATERIALS

A. Stainless Steel or Aluminum
B. All materials and gaskets must comply with the fluid medium.
C. No Copper and Zinc containing alloys are allowed.
D. Securing cable ropes: stainless steel
E. Gaskets / seals: VITON
F. Swivel: Stainless steel or Cast iron with internal and external coating application.
G. The swivel shall either be greaseless or in a way sealed for live and using tested grease such as Molykote 3452 or Castrol Inertox Medium.

3.2 IDENTIFYING MARKING

A. Brass or Aluminum name plates shall be fastened to the floating suction. The plates shall list the following:
   1. Manufacturer / supplier
   2. Model number
   3. Factory serial no.
   4. Year of construction
   5. Pressure class
   6. Test pressure
   7. Maximum flow rate
   8. Manufacturer’s inspection stamp

3.3 DOCUMENTATION

A. The supplier must issue the following documents in a digital format and as a hard copy, written in the English language:
   1. Data sheet
   2. Installation guidelines
   3. Operation and maintenance guidelines
   4. Operation manuals
   5. Report of factory tests
   6. Assembly Drawing
   7. Buoyancy calculations

4.0 EXECUTION

4.1 GENERAL REQUIREMENTS

A. Floating suction must be installed professionally.
B. All manufacturers' instructions must be followed.
C. Only authorized gaskets and mounting materials may be used during installation.

4.2 PACKAGING, TRANSPORT AND STORAGE

A. All material and equipment shall be packed in an adequate way to avoid damage, corrosion or loss during transport and interim storage on the construction site.
B. Flanges are to be sealed with plastic caps.
C. Special manufacturers' instructions must be followed.
D. Manufacturer, product type and item number shall be marked on the package.

B. PROCESS DATA SHEET FOR FLOATING SUCTION

1. GENERAL DATA

Location	Inside Cone Roof Storage Tank
Petroleum Class	Zone 2, Group IIA, Temperature Class T3
PMC Design/ Vendor Design	Vendor Design & Package
Surface Treatment	Required
Ext. Fire	Yes

2. FLUID DATA

Product handled – solid / Liquid / Gas	Liquid
Product Fluid Handled	ATF
Liquid Density @ ambient Kg/m^3	775-840
Liquid Viscosity @38°C cSt	0.8-1.5
Flammable / Explosive / Toxic	Flammable

3. DISTINCTIVE SPECIFICATIONS

Design	Double arm with 2 swivels and jumpers
Size and Type of Assembly	600 mm NB Floating Suction Articulated Type, Double Arm (user to specify)
Type of tank	Above Ground, Vertical Tank
Max. Flow rate through Floating Suction	Vendor to specify
Angle of movement of 1st Arm	0 to 60° max with respect to Axis of Outlet Nozzle
Angle of movement of 2nd Arm	0 to 80° max with respect to Axis of 1st Arm
Quantity	One for each ATF Tank

4. OPERATING CONDITION

Operating Temperature (°C)	Normal: 5 - 45 °C; Maximum: 50 °C
Maximum Working Pressure	20 MLC
Design Pressure	2.0 kg/cm^2 (g)
Hydro Test Pressure	3.0 kg/cm^2 (g)
Service	Intermittent

5. OPERATIONAL DATA

Pipe size required	600 mm
Diameter and Height of tank for vertical tank	24 m Dia. X 20 m Ht.
Manhole size	800 mm
Centerline of nozzle from floor of tank	800 mm
Any support or guide columns inside the tank? or any obstruction in the tank in case of horizontal tank	NA
Vertical pipe dimensions in mm for horizontal tank	NA
Size of the floating suction assembly	600 mm
Size of nozzle of tank outlet	600 mm
Manhole size in mm	800 mm
Bell mouth – Yes / No	Yes
Inspection cable – Yes / No	Yes
Operating range Max / Min level	
Sample lines and size in mm	25 mm
Float redundancy	Yes

6. DESIGN & CONSTRUCTION DATA

Design Type	Articulated, Double Arm, Swing Type
Movement of Floating Suction	Upwards & Downwards only
Max. Allowable pressure drop	0.14 kg/cm^2 through the Unit
MOC	See Note1
Other Requirements	Note 2

7. VENDOR DATA REQUIRED BY PROCESS

Make and Model No. of the equipment being offered
Operating Parameters - fit for handling Aviation Turbine Fuel? Range of Product Specific gravity that can be handled by the equipment (g/cc). Range of product Viscosity that can be handled by the equipment. Working temperature (°C)
Design Data - Design Code of the equipment being offered / Design Temp. (Deg C) / Design pressure (kg/sq.cm)g / Max / Working Pressure (kg/sq.cm)g / Hydrostatic Test Pressure (kg/sq.cm)g / Pressure drop through the Unit (kg/sq.cm), Buoyancy Calculations
Material of Construction - Specify the material of construction for Swing balls Joints / Specify the material of construction for Pipe Assembly / Specify the material of construction for Float / Specify the material of construction for Cable System including inspection holding cable / Specify the material of construction for Antistatic bonding connection / Specify the material of construction for Nuts and Bolts / Specify the material of construction for Gaskets /jumpers Are all metal parts coming in contact with fuel free of Zinc, Copper, Cadmium, and their alloys? (Y / N)

8. SPECIAL REQUIREMENTS & NOTES

1.	The Material of Construction shall be:		
	Swivel Joints	:	Aluminum / SS316 or Special Alloy suitable for ATFs Service
	Body	:	
	Pipe Assembly	:	Aluminum
	Float	:	Aluminum / SS 316
	Cable System	:	SS316
	Antistatic bonding connection	:	SS316
	Nuts and Bolts	:	Stainless Steel
	Gaskets/ Jumpers	:	SS
	Seals	:	Viton / Buna-N
	Bearing	:	Double ball bearing type with dual sealing system
	3-Level sampling line	:	SS316
	All metal parts coming in contact with fuel must be free of Zinc, Copper, Cadmium, and their alloys.		
2.	OTHER REQUIREMENTS		
	1.	Cable System - Against hitting of Floating Suction on to the roof	
	2.	Bonding - Antistatic bonding connection	
	3.	Lifting lug: One Lifting Lug near the Suction End of the Floating Suction to be provided	
	4.	Swing Joints: Aluminum, steel, or special alloys for chemical and other applications; flanged dual ball bearing – suitable for submerged liquid ATF application.	
	5.	Pipe or Tubing: Aluminum, lengths and sizes suitable for installation in the tank (tank size)	
	6.	Bell mouth: Low velocity conical configuration with baffle plate and anti-vortex plate.	
	7.	Floats: Stainless steel or aluminum and pressure tested; the floats provided shall have 100% redundancy for buoyancy.	
	8.	Baffle and Stop Leg: Aluminum, steel, or special alloys for chemical and other applications; designed to break suction 9 inches above tank bottom (or as specified)	
	9.	Inspection Cable: stainless steel SS 316.	
	10.	Provision of Air Removal	
	11.	Clamping provision for 3-level sample	

III. LIST OF DESIGN DRAWINGS

SR.NO.	DESCRIPTION	DRAWING NUMBER
1	DEMOLITION PLAN	DAFFPL-SGC-DWG-202
2	EXCAVATION EXTENT PLAN	DAFFPL-SGC-DWG-203
3	LAYOUT AND DETAILS FOR DYKE WALL (2 SHEETS)	DAFFPL-SGC-DWG-204
4	LAYOUT FOR STRUCTURAL PLATFORM	DAFFPL-SGC-DWG-209
5	RING BEAM FOUNDATION DRAWING FOR TANK	DAFFPL-SGC-DWG-205
6	DETAILS OF SPIRAL STAIRWAY & TOP LANDING PLATFORM & (2 SHEETS)	DAFFPL-SGC-DWG-213
7	GENERAL ARRANGEMENT DRAWING FOR TANK	DAFFPL-SGC-DWG-210
8	FLOATING SUCTION (N-2) & NOZZLE DETAILS	DAFFPL-SGC-DWG-211
9	FABRICATION DETAILS OF BARRICADING WALL	DAFFPL-SGC-DWG-212
10	TYPICAL NOZZLE DETAILS	DAFFPL-SGC-DWG-216
11	PIPING & INSTRUMENTATION DRAWING (P&ID) (2 SHEETS)	DAFFPL-PID-001
12	PIPING GENERAL ARRANGEMENT DRAWING	DAFFPL-SGC-DWG-206
13	PIPING GENERAL ARRANGEMENT DRAWING FOR FIRE-FIGHTING SYSTEM	DAFFPL-SGC-DWG-207

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METRES.
2. * –EXISTING FIRE WATER LINE IS INDECATIVELY SHOWN. R2
3. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.

LEGEND:–

SCOPE EXTENT & BARICATION FOR TANK WORK

SPACE FOR FUTURE TANK VF-208

VF-205

VF-206

VF-20

DEMOLITION OF EXISTING STAIRCASE AND RELOCATION R1

*EXISTING FIRE WATER LINE TO BE RE-ROUTED R1

AREA GRADING FOR TANK VF 207
AREA = 1688 SQM

REMOVAL OF HIGH MAST TOWER AND RELOCATION AS PER DIRECTIVE OF EIC.

REMOVE CCTC AND RELOCATE AS PER DIRECTIVE OF EIC

DEMOLITION OF CONCRETE FOUNDATION AND REMOVAL OF SAND

DEMOLITION OF EXISTING ROAD
AREA = 250 SQ.M.

PROPOSED DYKE WALL
FOR TANK VF-207= 115 M

R1 DEMOLISH EXITING DYKE WALL 1M (APPROX.)HEIGHT FROM TOP & TO CONVERT INTO FIRE WALL 45 M LENGTH

WCFM (E)

DH (E)

DH(E) DH(E)

16" FLANGE JOINT

16" HEADER

24" HEADER

ATF Storage

31 Foam Ta

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
1	31.05.2022	REVISED AS PER CLIENT COMMENTS	MK	DR	SKJ
0	18.05.2022	ISSUED FOR TENDER	MK	DR	SKJ

CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : DEMOLITION PLAN

DRAWING No.: DAFFPL-SGC-DWG-202 | SHEET: 1/1 | REV. R1 | SCALE : AS SHOWN

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METRES.
2. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.

LEGEND:–

	SCOPE EXTENT & BARICATION FOR TANK WORK
	EXCAVATION EXTENT

PROPOSED VALVE PIT
EXCAVATION AREA 5 SQ.MT.

PROPOSED PIPE TRENCH
EXCAVATION AREA 16 SQM

PROPOSED PIPE TRENCH
EXCAVATION AREA 105 SQM

PROPOSED TANK RING WALL
EXCAVATION AREA 174 SQM

PROPOSED DRAIN
EXCAVATION AREA 25 SQM.

PROPOSED DYKE WALL
EXCAVATION AREA 310 SQM

OPERATIONAL TANK ENCLOSURE
TOTAL CAPACITY 10000 KL

SPACE FOR FUTURE TANK VF-208

VF-205 VF-204 VF-203 VF-206 VF-201 VF-202

33.17 43.17 R10.85 R13.15 R1

Gate-2 01 Security Cabin Gate SH (E) Foam Tank Fire Hydrant Pump House 18 20M High Flood Light Tower 9 WCFM (E) DH (E) 5.0m Wide Road WCFM (P) 24" HEADER 16" FLANGE JOINT 24" END CAP Filter Water Separators WM(E) 8 Decantation Pumps DPB DP2 DP1 19 16 Refueling Simulator 11 ATF Storage Tank Farm 31 Foam Tank PROPOSED FILER STATION 25 Tube Well No.2 6.0m Wide Security

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PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : EXCAVATION EXTENT PLAN

DRAWING No.: DAFFPL-SGC-DWG-203 | SHEET: 1/1 | REV. 1 | SCALE : AS SHOWN

Gate
Cabin
Fire Hydrant Pump House
18
Foam Tank
SH (E)
WCFM (E)
Light Tower
9
DH (E)
WCFM (P)
5.0m Wide Road
TO OWS
VALVE PIT(1750X1750)
350 NB GATE VALVE
200NB UNDER GROUND PIPE
I.L. +98.510
24" HEADER
16" HEADER PROVISION
I.L. +98.465
I.L. +98.460
SLOPE
SUMP-1 600X600X500
I.L. +98.515
EXISTING VALVE PIT(1500X1750) TO BE USED AS COLLECTION PIT
EXISTING SUMP 800X800
EXISTING DRAIN
OPERATIONAL TANK ENCLOSURE TOTAL CAPACITY 10000 KL
24" END CAP
DH(E)
Filter Water Separators
SPACE FOR FUTURE TANK VF-208
VF-205
VF-204
VF-203
EXTENSION OF EXISTING STRUCTURAL PLATFORM
R1
I.L. +98.565
SUMP-2 800X800X900
400MM WIDE RCC DRAIN AS PER SLOPE (TYP.)
PROPOSED DYKE WALL (36 M LENGTH)
SUMP-1 600X600X500
I.L. +98.570
AVG. FFL +99.215
I.L. +98.620
EXISTING SUMP 600X600X500 DEEP
EXISTING DYKE WALL(42.7 M.) TO BE CONVERTED TO FIRE WALL (REFER DETAIL. A)
WM(E)
8
Decantation Pumps
DPB DP2 DP1
PROPOSED DYKE WALL (42.7 M.)
19
400MM WIDE RCC DRAIN AS PER SLOPE (TYP.)
VF-207
VF-206
VF-201
VF-202
11
RCC RING WALL FOR TANK 650MM THK.
PROPOSED DRAIN (42.7 M.)
AVG. FFL +99.175
I.L. +98.670
EXISTING I.L. 98.675
EXISTING DRAIN
16 Refueling Simulator
PROPOSED DYKE WALL (36 M LENGTH)
400MM WIDE RCC DRAIN AS PER SLOPE (TYP.)
ATF Storage Tank Farm
Tanks

25 THK. GRATING
350 NB GATE VALVE
6MM THK. PADDLE PLATE
FFL +99.40
PIPE 200NB
8ø150C/C
150 THK. PCC (1:4:8)
8ø150C/C BOTHWAYS
40 MM SCREEDING WITH WATER PROOFING LAID IN SLOPE
LAID IN SLOPE WITH WATER PROOFING 40 MM SCREEDING
FFL +99.215
DRAIN SLOPE
100 THK. PCC (1:4:8)
DYKE WALL

TYPICAL SECTION FOR SUMP-1 AND SUMP-2
SCALE - 1:25

25 THK. GRATING
350 NB GATE VALVE
RUNGS
FGL +99.65
8ø150C/C
EL 98.455
25MM THK WATER PROOF PLASTER
100 THK. PCC (1:4:8)
230 THK. RUBBLE SOLING (TYP.)
8ø150C/C BOTHWAYS

TYPICAL SECTION FOR VALVE CHAMBER
SCALE - 1:25

FGL +99.65
COMPACT BACKFILL
OWS PIPE
SAND BED

TYPICAL SECTION FOR OWS PIPE TERNCH

REFERENCE DRAWINGS :-	
DRAWING NO	TITLE
DAFFPL-SGC-DWG-201	SCOPE EXTENT FOR ADDITIONAL TANK AT DAFFPL FUEL FARM
DAFFPL-SGC-DWG-208	RING BEAM FOUNDATION DRAWING FOR ATF TANK 24.000 MTR DIA. x 20.000 MTR HEIGHT
DAFFPL-SGC-DWG-204 (SH.2 OF 2)	RC DETAILS FOR DYKE WALL

NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METRES.
2. ALL CONCRETE GRADE OF M30 SHALL BE USED.
3. REINFORCING BARS SHALL CONFORM TO GRADE Fe 500 OF IS:1786.
4. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.
5. SUB-BASE PROPOSED INSIDE VF-207 DYKE AREA BASED ON PRELIMINARY DATA RECEIVED, HOWEVER CONTRACTOR TO CARRY OUT SOIL INVESTIGATION TEST AND BASED ON SOIL INVESTIGATION REPORT SUB-BASE SHALL BE FINALIZED IN CONSULTATION WITH CLIENT/OWNER/ENGINEER INCHARGE.

FOLLOWING PROCEDURE SHALL BE ADOPTED JOINING NEW CONCRETE TO OLD CONCRETE. :-

1. CHIP OFF AND MAKE OLD CONCRETE SURFACE ROUGH. WASH LOOSE LATIANCE USING STRONG WATER JET. APPLY SUITABLE EPOXY BONDING AGENT LIKE ARDALITE OR EQUIVALENT, FOLLOWED IMMEDIATELY BY POURING OF NEW CONCRETE.

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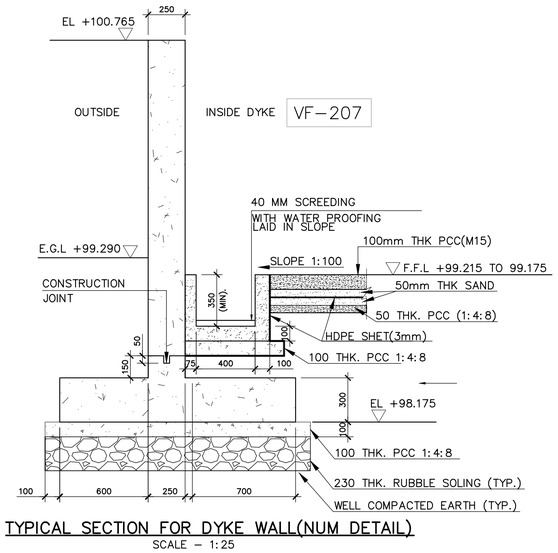
PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

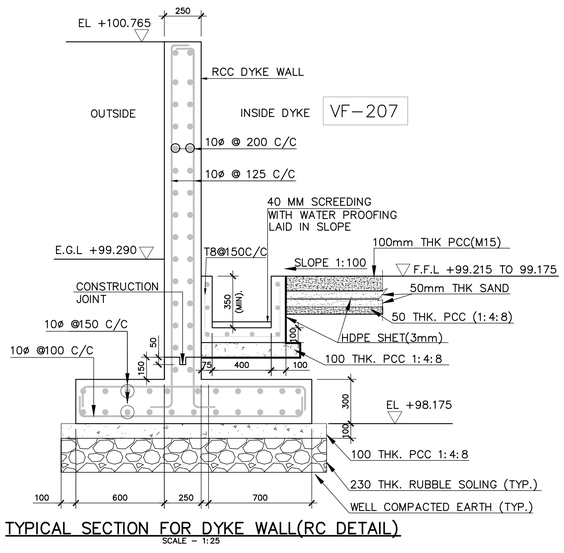
TITLE : LAYOUT AND DETAILS FOR DYKE WALL

DRAWING No.: DAFFPL-SGC-DWG-204 | SHEET: 1/2 | REV. 1 | SCALE : AS SHOWN



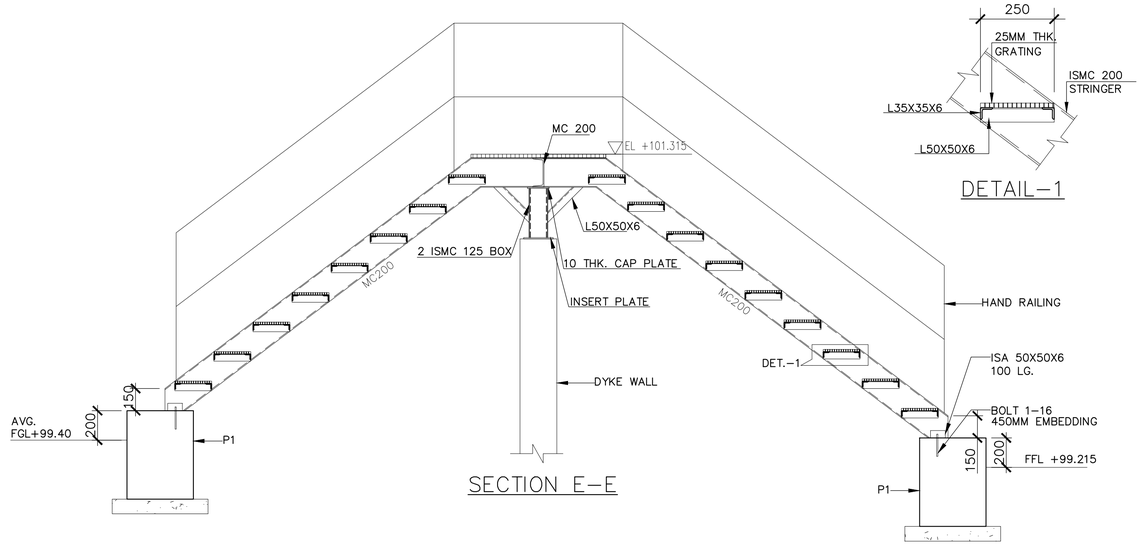
TYPICAL SECTION FOR DYKE WALL(NUM DETAIL)

SCALE - 1:25

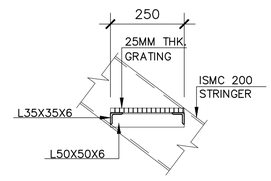


TYPICAL SECTION FOR DYKE WALL(RC DETAIL)

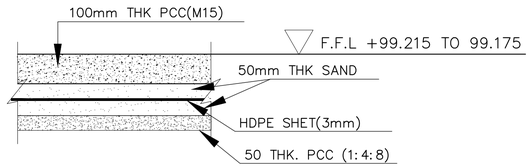
SCALE - 1:25



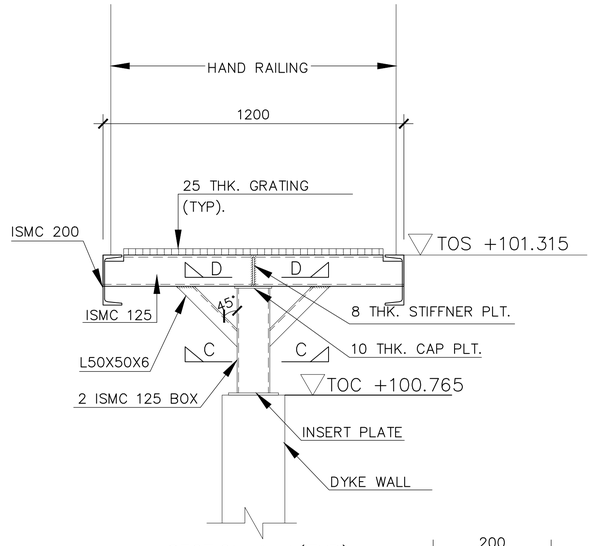
SECTION E-E



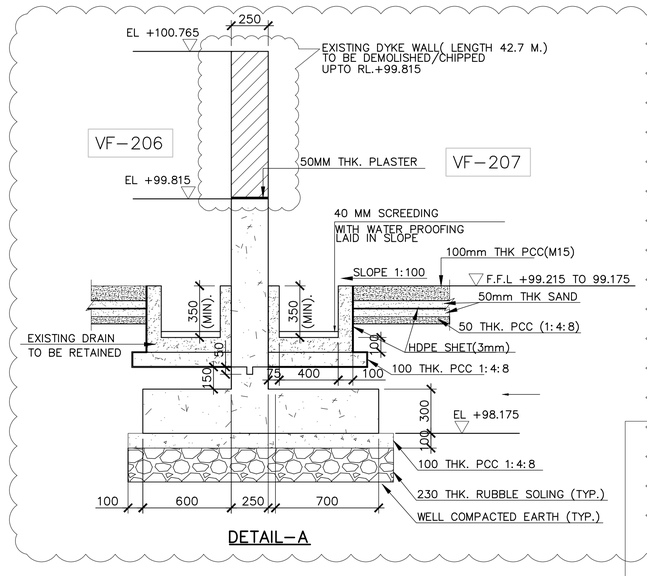
DETAIL-1



TYPICAL DETAILS FOR PAVING IN TANK FARM AREA

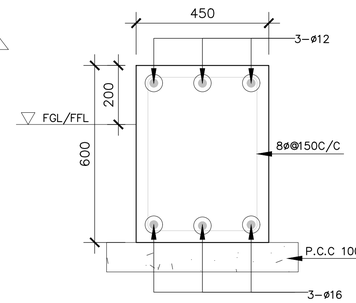


SECTION A-A(TYP).

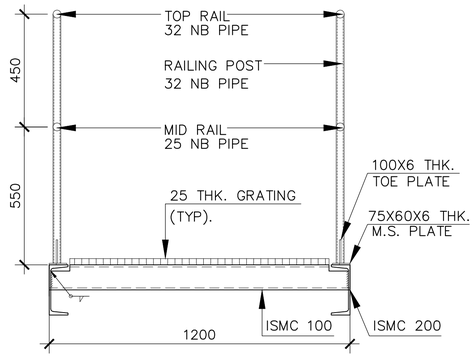


DETAIL-A

R1



TYPICAL DETAIL OF PEDESTAL P1



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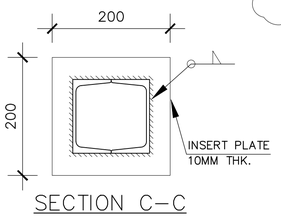
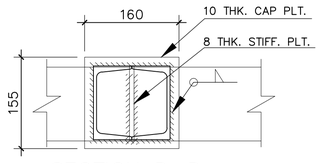
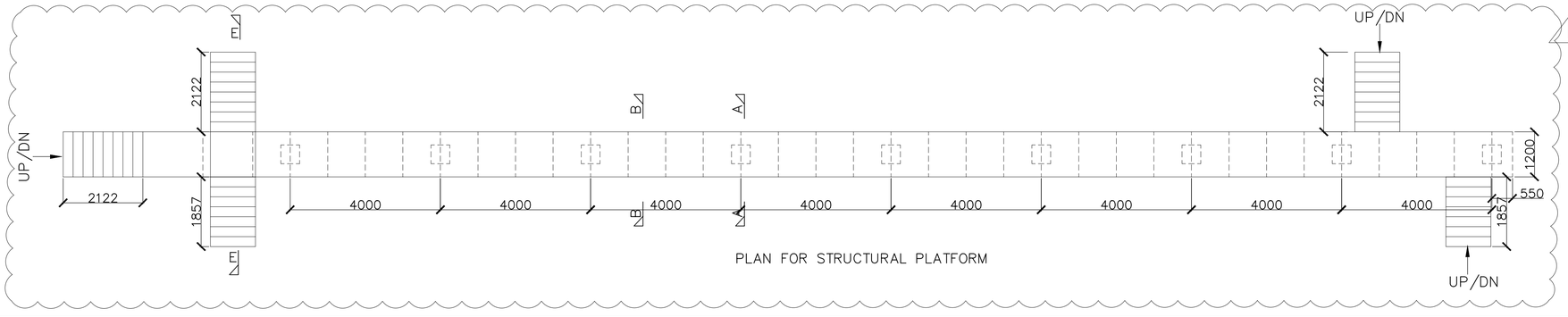


SECTION C-C



SECTION D-D



PLAN FOR STRUCTURAL PLATFORM

R1

REFERENCE DRAWINGS:-	
DRAWING NO	TITLE
DAFFPL-SGC-DWG-201	SCOPE EXTENT FOR ADDITIONAL TANK AT DAFFPL FUEL FARM
DAFFPL-SGC-DWG-208	RING BEAM FOUNDATION DRAWING FOR ATF TANK 24.000 MTR DIA. x 20.000 MTR HEIGHT
DAFFPL-SGC-DWG-204 (SH. 1 OF 2)	LAYOUT AND DETAILS FOR DYKE WALL

NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METRES.
2. ALL CONCRETE GRADE OF M30 SHALL BE USED.
3. REINFORCING BARS SHALL CONFORM TO GRADE Fe 500 OF IS:1786.
4. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.
5. SUB-BASE PROPOSED INSIDE VF-207 DYKE AREA BASED ON PRELIMINARY DATA RECEIVED, HOWEVER CONTRACTOR TO CARRY OUT SOIL INVESTIGATION TEST AND BASED ON SOIL INVESTIGATION REPORT SUB-BASE SHALL BE FINALIZED IN CONSULTATION WITH CLIENT/OWNER/ENGINEER INCHARGE.

FOLLOWING PROCEDURE SHALL BE ADOPTED JOINING NEW CONCRETE TO OLD CONCRETE. :-

1. CHIP OFF AND MAKE OLD CONCRETE SURFACE ROUGH. WASH LOOSE LATIANCE USING STRONG WATER JET. APPLY SUITABLE EPOXY BONDING AGENT LIKE ARDALITE OR EQUIVALENT, FOLLOWED IMMEDIATELY BY POURING OF NEW CONCRETE.

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PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : RC DETAILS FOR DYKE WALL

DRAWING No.: DAFFPL-SGC-DWG-204 | SHEET: 2/2 | REV. 1 | SCALE: AS SHOWN

Foam Tank

Fire Hydrant Pump House

18

SH (E)

SPACE FOR FUTURE TANK VF-208

24" HEADER

16" HEADER PROVISION

24" HEADER

24" HEADER

24" END CAP

OPERATIONAL TANK ENCLOSURE
TOTAL CAPACITY 10000 KL

VF-205

VF-204

VF-203

DH(E)

Filter Water Separators

PROPOSED STRUCTURAL PLATFORM
AS PER EXISTING PLATFORM

UP/DN

EXISTING STRUCTURAL PLATFORM

WM(E)

WCFM (E)

AVG. FFL +99.215

SLOPE

8
Decantation Pumps
DPB DP2 DP1

VF-207

VF-206

VF-201

VF-202

19

11

DH(E)

16 Refueling Simulator

DH (E)

AVG. FFL +99.175

16" HEADER

16" HEADER

ATF Storage Tank Farm

WCFM (E)

DH(E) DH(E)

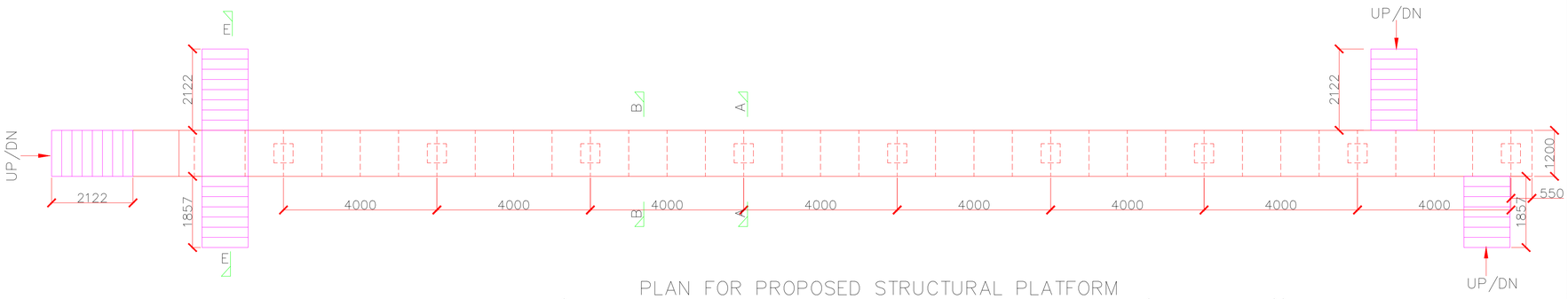
WCFM (E)

DH(E)

WCFM (P)

24" HEADER

inks



PLAN FOR PROPOSED STRUCTURAL PLATFORM
(FOR DETAILS REFER DWG NO. DAFFPL-SGC-DWG-204 (SH. 2 OF 2))

REFERENCE DRAWINGS:-

DRAWING NO	TITLE
DAFFPL-SGC-DWG-201	SCOPE EXTENT FOR ADDITIONAL TANK AT DAFFPL FUEL FARM
DAFFPL-SGC-DWG-208	RING BEAM FOUNDATION DRAWING FOR ATF TANK 24.000 MTR DIA. x 20.000 MTR HEIGHT
DAFFPL-SGC-DWG-204 (SH.2 OF 2)	RC DETAILS FOR DYKE WALL
DAFFPL-SGC-DWG-204 (SH. 1 OF 2)	LAYOUT AND DETAILS FOR DYKE WALL

NOTES :-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METRES.
2. ALL CONCRETE GRADE OF M30 SHALL BE USED.
3. REINFORCING BARS SHALL CONFORM TO GRADE Fe 500 OF IS:1786.
4. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	06-06-2022	ISSUED FOR TENDER	PS	KA	SKJ

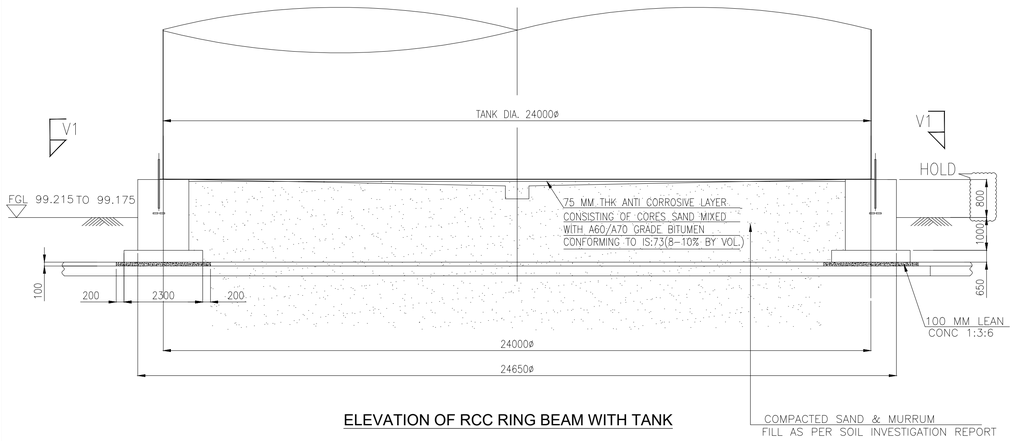
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

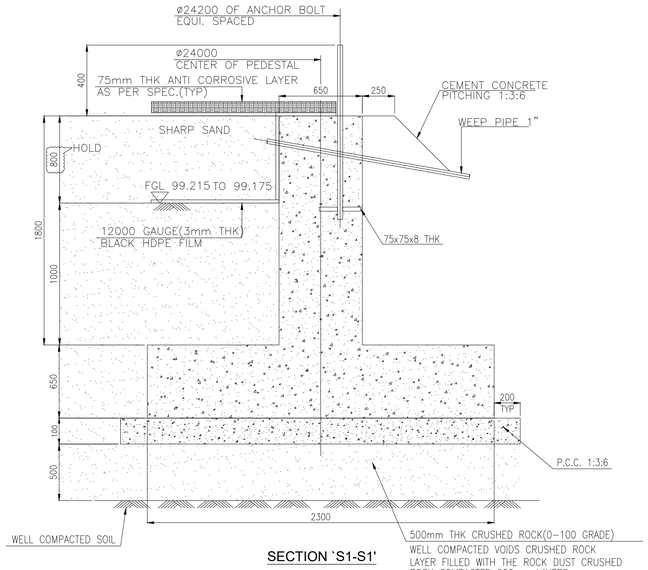
EPCC : SAGA GLOBAL CONSULTANTS

TITLE : LAYOUT FOR STRUCTURAL PLATFORM

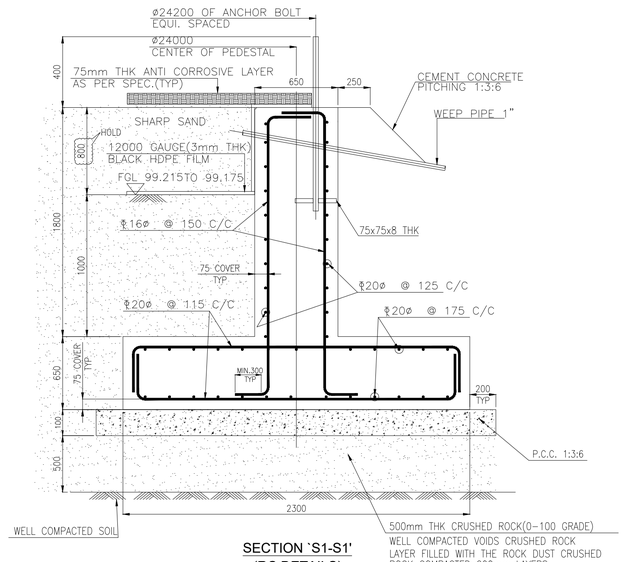
DRAWING No.: DAFFPL-SGC-DWG-209	SHEET: 1/1	REV. 0	SCALE : AS SHOWN



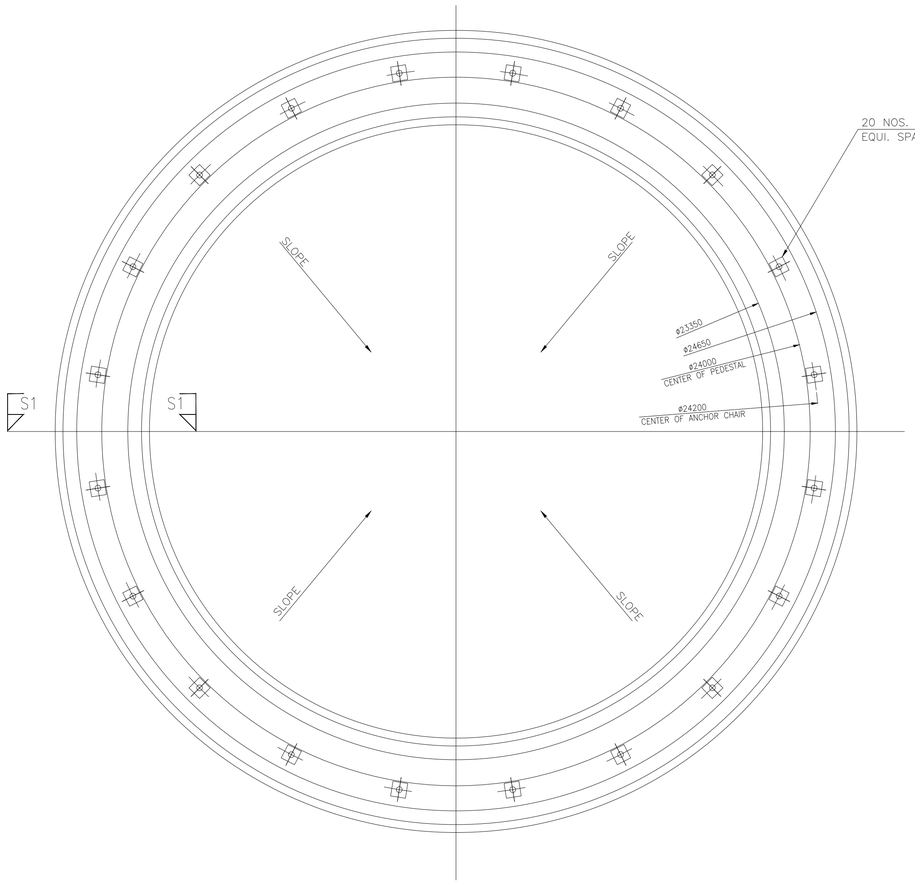
ELEVATION OF RCC RING BEAM WITH TANK



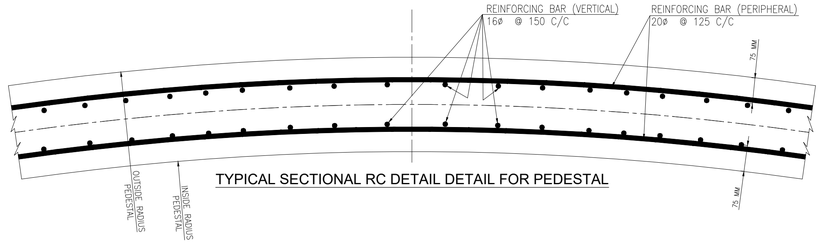
SECTION `S1-S1'
(NUM DETAILS)



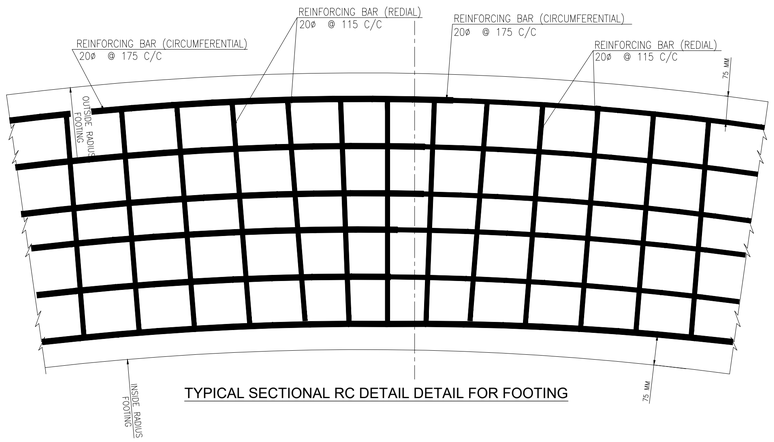
SECTION `S1-S1'
(RC DETAILS)



VIEW-V1-V1



TYPICAL SECTIONAL RC DETAIL DETAIL FOR PEDESTAL



TYPICAL SECTIONAL RC DETAIL DETAIL FOR FOOTING

REFERENCE DRAWING :

DRAWING NO	TITLE
DAFFPL-SGC-DWG-201	SCOPE EXTENT FOR ADDITIONAL TANK AT DAFFPL FUEL FARM
DAFFPL-SGC-DWG-202	DYKE WALL PLAN AND RC DETAILS

GENERAL NOTES :-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. GRADE OF CONCRETE SHALL BE M30 AND CONFORM TO IS:456
3. REINFORCING BARS SHALL CONFORM TO IS:1786 DEFORMED BARS SHALL HAVE MIN. IS 415.
4. SLOPE OF ANTICORROSIVE LAYER SHALL MATCH WITH TANK BOTTOM.
5. THE RING WALL LEVEL SHALL BE MAINTAINED WITHIN 6mm (+ 3mm) IN A PERIMETER OF 10 M. AND NO TWO POINTS ON THE WALL SHALL DIFFER IN ELEVATION BY MORE THAN 12mm (+ 6mm)
6. NECESSARY INSERT PLATES SHALL BE PROVIDED IN THE RING WALL TO SUIT SPIRAL STAIR REQUIREMENT.
7. ALL DIMENSIONS ARE MERELY INDICATIVE & EPC CONTRACTOR NEEDS TO CARRY OUT THE FINAL MEASUREMENT AND SUBMIT DRAWINGS ACCORDINGLY.
8. SUB-BASE PROPOSED INSIDE VF-207 DYKE AREA BASED ON PRELIMINARY DATA RECIVIED HOWEVER CONTRACTOR TO CARRY OUT SOIL INVESTIGATION TEST AND BASED ON SOIL INVESTIGATION REPORT SUB-BASE SHALL BE FINALIZED IN CONSULTATION WITH CLIENT/OWNER/ENGINEER INCHARGE.

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	18.05.2022	ISSUED FOR TENDER	PS	KA	SKJ

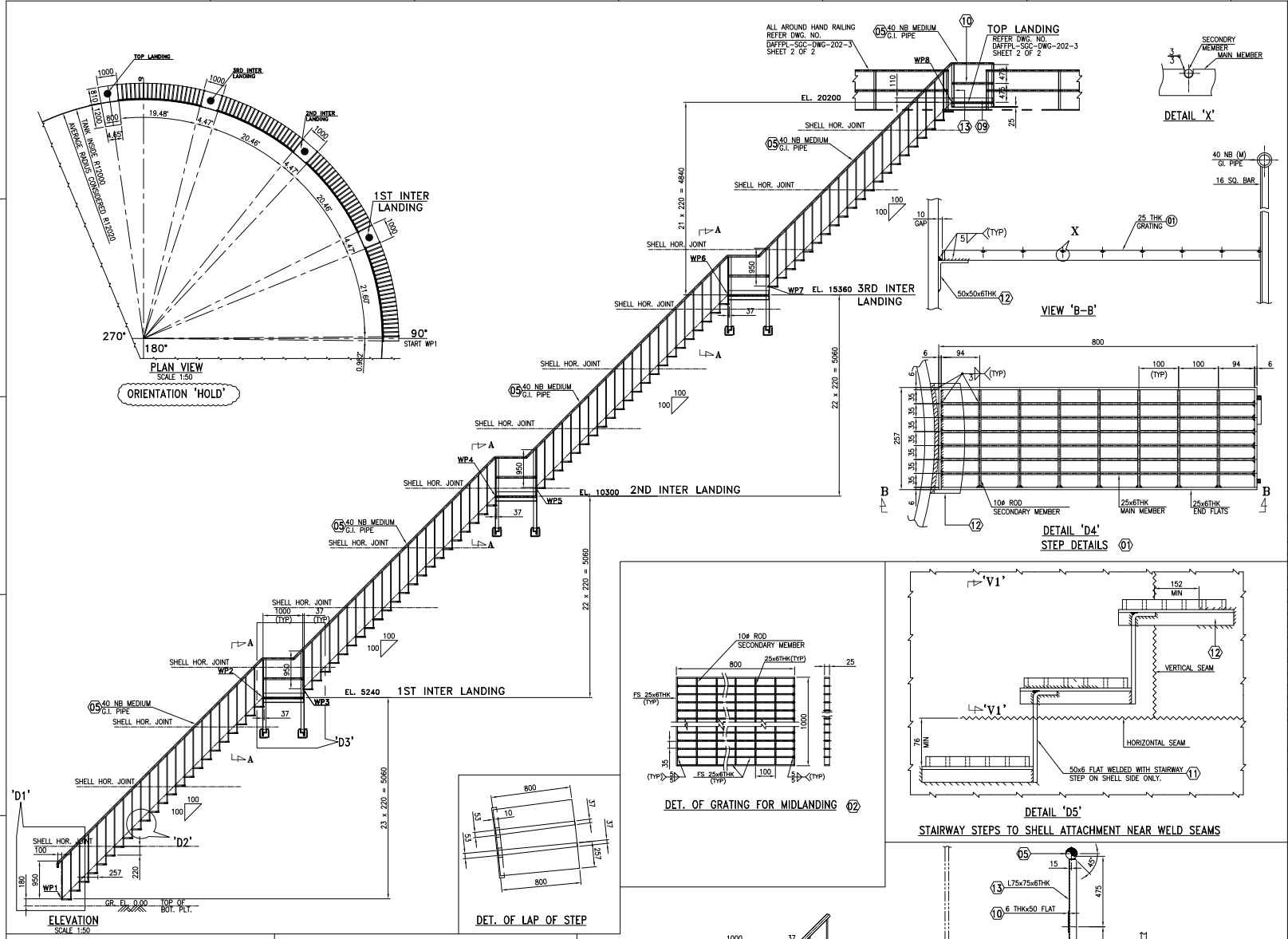
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : RING BEAM FOUNDATION DRAWING FOR ATF TANK 24.000 MTR DIA. x 20.000 MTR HEIGHT

DRAWING No.: DAFFPL-SGC-DWG-205	SHEET: 1/1	REV. 0	SCALE : AS SHOWN



NOTES :

1) ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2) ALL WELDS ARE 6 MM FILLET WELD UNLESS OTHERWISE STATED.

TOTAL WT. FOR ONE TANK 1671.59 Kgs.

BILL OF MATERIAL FOR ONE TANK

NO. SR.	DESCRIPTION	SIZE.	QTY.	M.O.C.	WT. KG UNIT.	WT. KG TOTAL	REMARKS
13	RAILING POST	L 75x75x6THK x 1050 LG.	05	IS 2062 Gr.A	7.14	35.7	
12	SUPPORT ANGLE	L 50x50x6THK x 275	85	IS 2062 Gr.A	1.24	105.4	
11	SUPPORT FLAT	L 50x6THK x 275	06	IS 2062 Gr.A	0.65	3.9	SUIT AT SITE
10	PLATFORM MID RAIL FLAT	50 x 1000 X 6THK	04	IS 2062 Gr.A	2.35	9.40	
09	PLATFORM GUARD RAIL FLAT	100 x 1000 x 6THK	04	IS 2062 Gr.A	4.71	18.84	
08	PAD PLATE	200 x 200 X 6THK	06	IS 2062 Gr.B	1.88	11.25	
07	INTERLANDING PLATFORM FRAME	ISMC 100 x 2620 LG	03	IS 2062 Gr.A	24.10	72.30	
06	INTERLANDING RAILING POST	L 75x75x6THK x 1250 LG.	06	IS 2062 Gr.A	8.5	51.0	
05	STAIRWAY HANDRAIL PIPE	40 NB(M)x~32300 LG.	01	IS 1239 (M) G.I	152.98	152.98	
04	SQ. BAR FOR 1st STEP	16 SQ. x 1000 LG	01	MSWQ	2.02	2.02	
03	SQ. BAR	16 SQ. x 1290 LG	84	MSWQ	2.60	218.4	
02	INTER LANDING PLATFORM	800 x 1000 x 25THK	03	MSWQ	40.00	120.00	
01	STAIR TREAD GRATING	257 x 800 x 25THK	85	MSWQ	10.24	870.4	

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	04.04.2022	ISSUED FOR APPROVAL	NSA	DR	SKJ

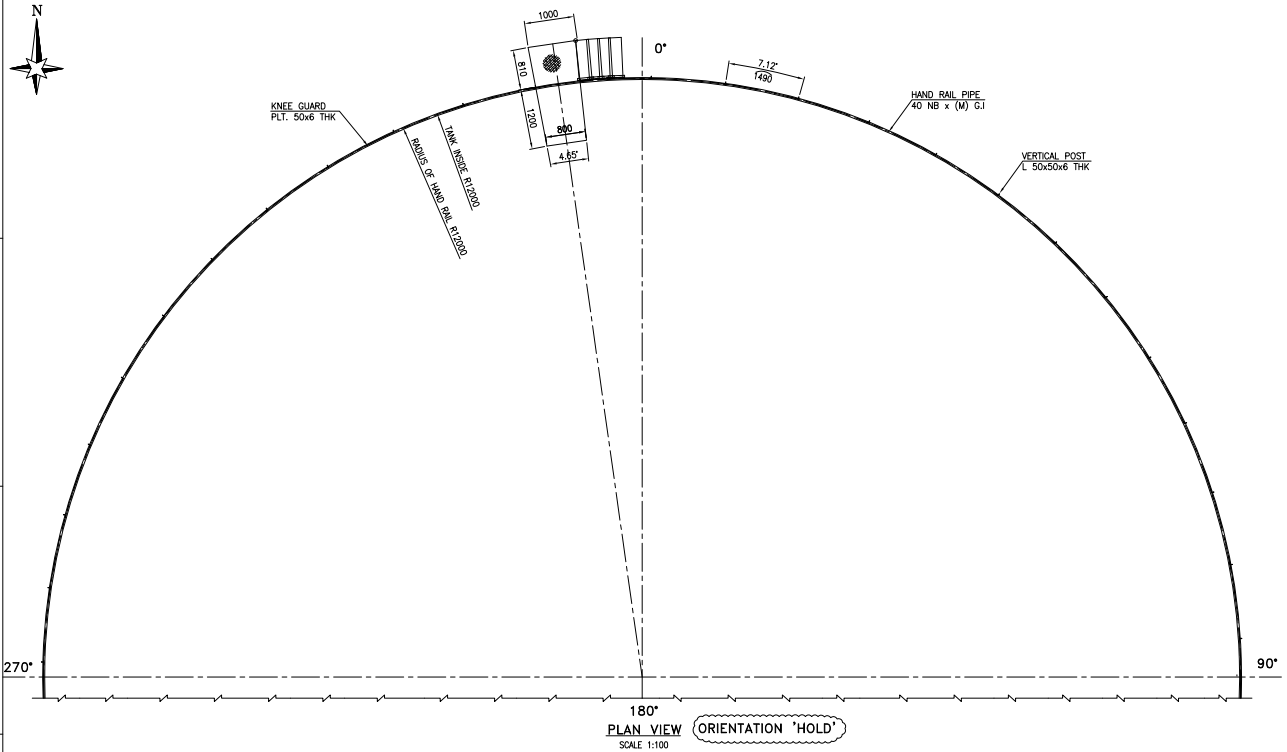
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : DESIGN CONSULTANCY FOR CONSTRUCTION OF 9000 KL AG ATF STORAGE TANK

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : DETAIL OF SPIRAL STAIRWAY FOR ATF TANK(T-201) 24.000 MTR DIA. x 20.000 MTR HT.

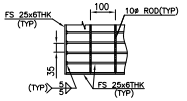
DRAWING No: DAFFPL-SGC-DWG-213 | SHEET: 1/2 | REV. 0 | SCALE : N.T.S.



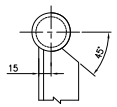
PLAN VIEW

SCALE 1:100

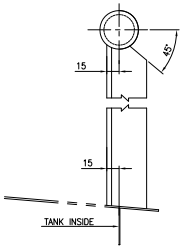
ORIENTATION 'HOLD'

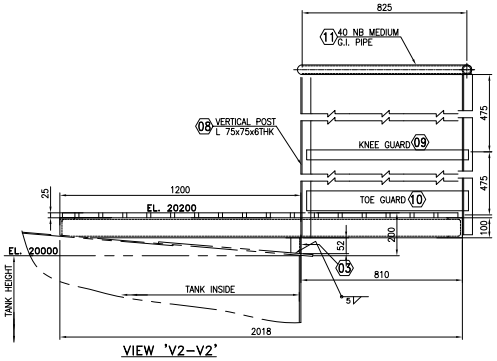


DET. OF TOP PLATFORM GRATING

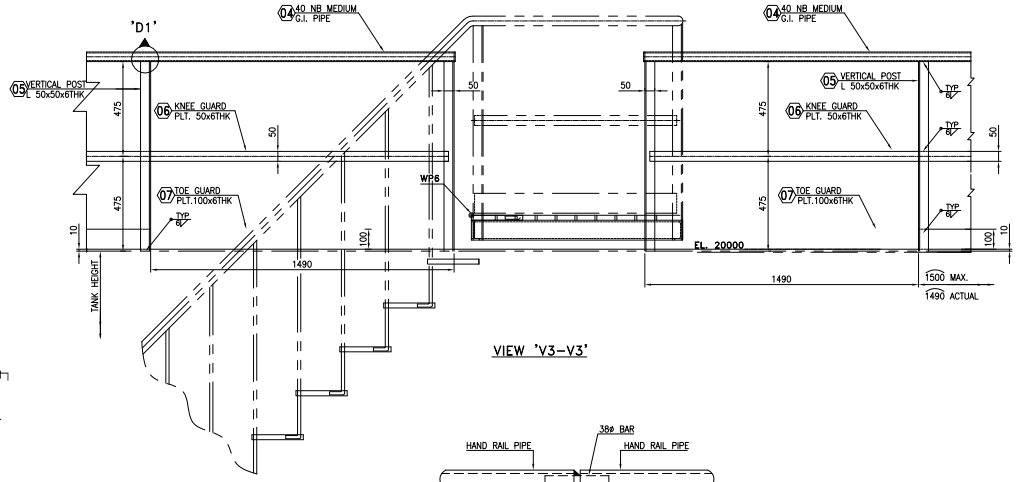


DETAIL 'D1'

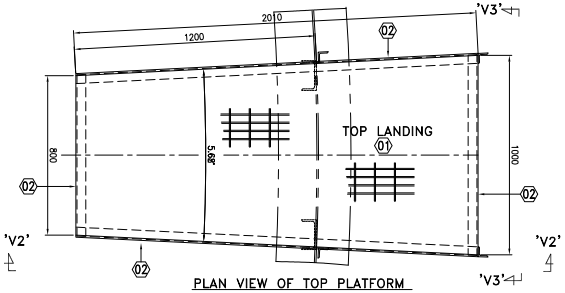




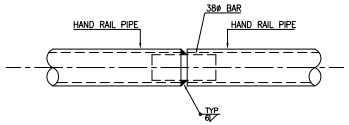
VIEW 'V2–V2'



VIEW 'V3–V3'



PLAN VIEW OF TOP PLATFORM



TYP. DET. OF HAND RAIL PIPE JOINT

NOTES :

1) ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2) ALL WELDS ARE 6 MM FILLET WELD UNLESS OTHERWISE STATED.

TOTAL WT.FOR ONE TANK 1263.74 Kgs.

NO. SR.	DESCRIPTION	SIZE	QTY	M.O.C.	KGS UNIT.WT.	KGS TOTAL.WT.	REMARKS
11	HAND RAIL PIPE	40 NB x (W)x 810	02	IS 1239 (M) G.I	2.92	5.84	
10	TOE GUARD	100 x 810 x 6THK	02	IS 2062 Gr.A	3.82	7.64	
09	KNEE GUARD	50 x 810 X 6THK	02	IS 2062 Gr.A	1.91	3.82	
08	VERICAL ANGLE	L 75x75x6THK x1050	02	IS 2062 Gr.B	7.14	14.28	
07	TOE GUARD	100 x7536O x 6THK	01	IS 2062 Gr.A	354.94	354.94	
06	KNEE GUARD	50 x 115414 x 6THK	01	IS 2062 Gr.A	271.80	271.80	
05	RAILING POST	L 50x50x6THK x 950	52	IS 2062 Gr.A	4.28	222.56	
04	HAND RAIL PIPE	40 NB x (W)x=7536O	01	IS 1239 (M) G.I	244.92	244.92	
03	VERTICAL CHANNEL	ISMC 100 x 52 LG	02	IS 2062 Gr.A	0.89	1.78	
02	TOP LANDING PLATFORM FRAME	ISMC 100 x 5820 LG.	01	IS 2062 Gr.A	53.96	53.96	
01	TOP LANDING PLATFORM	AS SHOWN	01	IS 2062 Gr.A	82.20	82.20	

BILL OF MATERIAL FOR ONE TANK

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	04.04.2022	ISSUED FOR APPROVAL	NSA	DR	SKJ

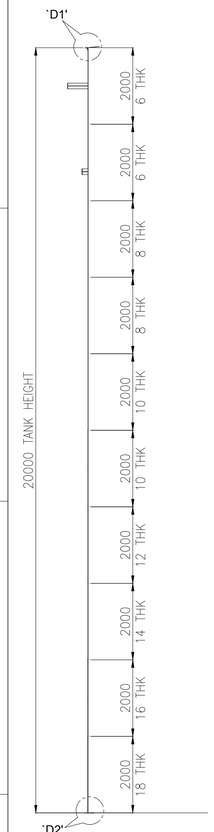
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : DESIGN CONSULTANCY FOR CONSTRUCTION OF 9000 KL AG ATF STORAGE TANK

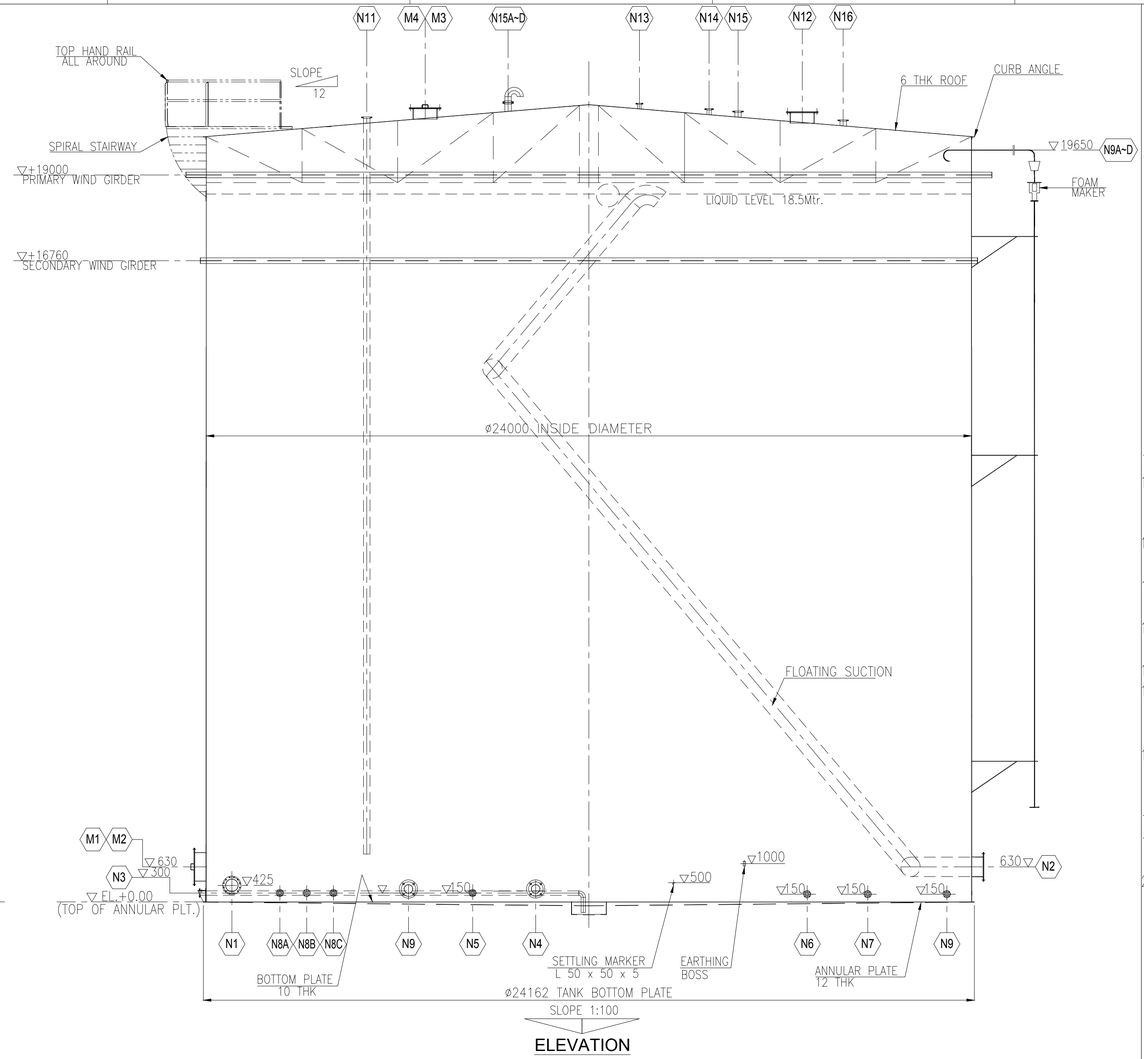
EPCC : SAGA GLOBAL CONSULTANTS

TITLE : DET. OF TOP LANDING PLATFORM & HAND RAIL FOR ATF TANK(T-201) 24.000 MTR DIA. x 20.000 MTR HT.

DRAWING No.: DAFFPL-SGC-DWG-213	SHEET: 2/2	REV. 0	SCALE : N.T.S.



SHELL GIRTH



ELEVATION

GENERAL NOTES :-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. ALL BUTT WELD SEAMS WITHOUT BACKING STRIP SHALL BE CHIPPED BACK TO SOUND METAL & REWELD.
3. MANHOLE AND NOZZLE NECK 600NB AND ABOVE MAY BE FABRICATED FROM PLATE AND SHALL BE 100% RADIOGRAPHED.
4. ALL NOZZLE 50NB AND BELOW SHALL BE STIFFENED BY 2 NOS, 50x6THK FLAT 90° APART.
5. ALL NOZZLE AND MANHOLE BOLTS SHALL STRADDLE THE NEUTRAL AXIS OF EQUIPMENT.
6. THE NOZZLE ABOVE 50NB SHALL BE PROVIDED WITH REINFORCEMENT PAD AS PER CODE.
7. UNLESS OTHERWISE SPECIFIED, NOZZLE FLANGE SHALL CONFIRM TO ANSI/ASME B16.5, CLASS 150 FOR SIZES UPTO 600NB AND TO ASME B16.47 CLASS 150 FOR SIZES ABOVE 600NB.
8. ALL COMPENSATION RINGS AND PADS SHALL BE PNEUMATICALLY TESTED WITH AIR AT 100 KPa(G) BY APPLYING SOAP SOLUTION ON OUTSIDE WELD. ALL REINFORCEMENT PADS SHOULD HAVE 6ø TELL-TALE ON HORIZONTAL CENTERLINE.
9. PROJECTION OF SHELL NOZZLE ARE MENTIONED FROM OUTSIDE DIAMETER OF TANK /OUTER SURFACE OF ROOF OF TANK TO NOZZLE FLANGE FACE(i.e. GASKET SEATING FACE)
10. DIMENSIONAL TOLERANCES SHALL BE IN ACCORDANCE WITH CLAUSE 7.5 OF API 650.
11. VERTICAL JOINTS IN ADJACENT SHELL COURSES SHALL NOT BE IN ALIGNMENT BUT SHALL BE OFFSET FROM EACH OTHER BY 1/3RD OF THE PLATE LENGTH BUT IN NO CASE LESS THAN A DISTANCE OF 300 mm.
12. GAUGE HATCH, TEMPERATURE ELEMENT & LEVEL TRANSMITTER SHOULD BE LOCATED AWAY FROM THE INLET AND OUTLET NOZZLE.
13. ELECTRODES:- E-6013 : PLATES UP TO 12 THK.
    E-7018 : PLATES 12.5 THK AND ABOVE & SHELL TO ANNULAR JOINT.
14. THE TANKS SHALL BE MANUFACTURED, INSPECTED / TESTED, ERECTED & PAINTED AS PER LISTED SPECIFICATION
15. EARTHING BOSS SHALL BE PROVIDED AS PER STD. & OISD 244.
16. EPC CONTRACTOR HAS TO DESIGN, FABRICATE, SUPPLY, INSTALL ERECT AND COMMISSION THE FROM POURER SYSTEM ALONG WITH FOAM TANK AND OTHER ACCESSORIES AND WATER SPRINKLER SYSTEM AS PER SPECIFICATION.
17. EACH FOAM POURER NOZZLE TO BE PROVIDED WITH A PLATFORM OF SIZE 1.5M x 1.5M WITH RAILING AND A MONKEY LADDER TO ACCESS THE PLATFORM FROM THE ROOF TOP.
18. VENT CONSIDERED AS PER API 2000 APPLICABLE.
19. NOZZLE ORIENTATION SHOWN ARE TENTATIVE AND THE SAME SHALL BE TO CONFIRMED BY ENGINEER INCHARGE BASED ON THE EXISTING TANK NOZZLE ORIENTATION.
20. TRV LINE SHALL BE EXTENDED UP TO TANK BOTTOM.

DESIGN DATA

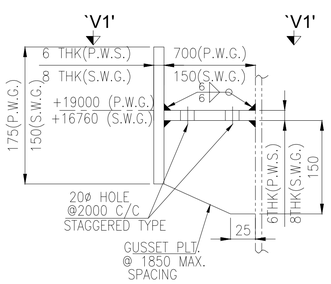
DESIGN CODE		API-650, LATEST EDITION
STORED PRODUCT		ATF
SIZE OF TANK		INSIDE DIAMETER-24.000M & HEIGHT-20.000M
CAPACITY (PUMPABLE/LICENSE)	M^3	8144/8300
NOS OF TANK		ONE
TYPE OF ROOF		CONE ROOF
CORROSION ALLOWANCE		BOTTOM SHELL COURSE & BOTTOM PLT.-3.0MM OTHER COURSES & ROOF-1.5MM
LIQUID DENSITY	KG/M^3	760-810
MAX. DESIGN LIQUID LEVEL	M	20.0
DESIGN (POSITIVE) PRESSURE	MM WC	ATMOSPHERIC + FULL OF LIQUID
OPERATING PRESSURE	MM WC	ATMOSPHERIC
DESIGN TEMPERATURE	°C	80
OPERATING TEMPERATURE	°C	45
MDMT TEMPERATURE	°C	0
TEST PRESSURE	$Kg./cm^2g$	FULL OF WATER
JOINT EFFICIENCY		0.85
RADIOGRAPHY		AS PER CODE
FLASH POINT	°C	38
WIND SPEED	Km/hr	120
WIND PRESSURE	KG/M^2	AS PER IS 875, ZONE-II
SEISMIC / ZONE		AS PER IS:1893- 2002 ED./ ZONE-II
PAINTING		AS PER SPECIFICATION
INSULATION / THK		NIL/-
FLOW RATE (IN/OUT)	$m^3/hr.$	-
INSPECTION		CLIENT / TPI
EMPTY WEIGHT	M.T.	~ 246.0
OPERATING WEIGHT	M.T.	~ 7324.9
HYDROTEST WT.	M.T.	~ 9279.2

NOZZLE SCHEDULE

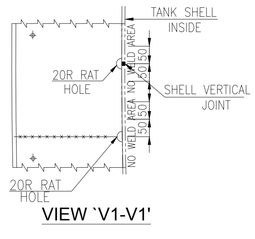
	MARK	NOZZLE SIZE	NOZZLE SCH/THK	QTY.	FLANGE RTG.	FLANGE TYPE	FLANGE FACE	PROJ.	SERVICE
SHELL	M1/2	900	14THK	02	AS PER STD.			300	SHELL M/H WITH COVER
	N1	400	80/-	01	150#	SO	RF	250	INLET
	N2	600	80/-	01	150#	SO	RF	300	OUTLET(WITH FLOATING SUCTION)
	N3	100	80/-	01	150#	SO	RF	175	BY PASS LINE
	N4	250	80/-	01	150#	SO	RF	250	INLET
	N5	80	80/-	01	150#	SO	RF	150	WATER DRAW OFF
	N6	25	80/-	01	150#	SO	RF	150	PRESSURE TRANSMITTER
	N7A/B/C	25	80/-	01	150#	SO	RF	150	LEVEL SAMPLE(TOP,MIDDLE,BOTTOM)
	N8	50	80/-	01	150#	SO	RF	150	DESNSITY METER
	N9	200	80/-	01	150#	SO	RF	150	SPARE
	N16A/B/C	100	40/-	03	150#	SO	RF	225	FOAM POURER WITH DEFLECTOR
FIXED ROOF	M3/4	600	6 THK	02	AS PER STD.			150	ROOF MANHOLE WITH COVER
	N10	200	40/-	01	150#	SO	RF	150	DIP HATCH WITH COVER
	N11A/B	600	40/-	02	150#	SO	RF	150	ROOF VENT
	N12A/B	500	6THK	02	MATCHING FLANGE				LEVEL TRANSMITTER(RADAR TYPE)
	N13A/B	200	40/-	02	300#	SO	RF	150	LEVEL SWITCH
	N14	200	40/-	01	150#	SO	RF	150	SPARE
	N15	150	40/-	01	150#	SO	RF	150	SPARE

TANK PAINTING

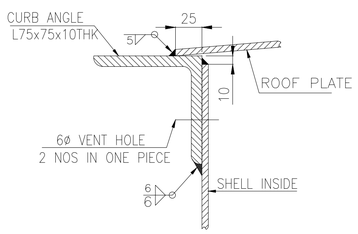
	ACTIVITY	TYPE	NO.OF COATS	DFT/COAT (MICRONS)	TOTAL DFT (MICRONS)	SURFACE PREPARATION
INTERNAL SHELL, ROOF, BOTTOM &ROOF STRUCTURE	FIRST PRIMER COAT	Inorganic Zinc Silicate	1	65-75	300-365	BLAST CLEANED TO SA 2.5 GRADE FINISH
	FINISH COAT	EPOXY ZINC PHOSPHATE INTERMEDIATE COAT	1	35-40		
		Amine Product cured HB epoxy liner finish coat	2	100-125		
EXTERNAL SHELL, ROOF & ANNULAR PLATE	FIRST PRIMER COAT	Epoxy resin reinforced with Aluminium and Micacious Iron-Oxide	1	100-150	280-350	BLAST CLEANED TO SA 2.5 GRADE FINISH
	FINISH COAT	Aliphatic isocyanate polyurethane.	2	30-40		
		IS 220 Olive Green.	1	120		
SOIL SIDE BOTTOM PLATE	FIRST PRIMER COAT	INORGANIC ZINC ETHYL SYLICATE	1	65-75	295-305	BLAST CLEANED TO SA 2.5 GRADE FINISH
	INTERMEDIATE COAT	EPOXY ZINC PHOSPHATE	1	35-40		
	FINISH COAT	HIGH BUILD COALTAR COAL TAR EPOXY COATING	2	100		



WIND GIRDER TO SHELL JOINT DETAIL

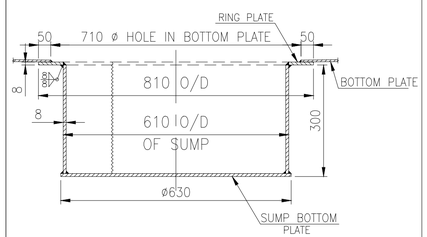


VIEW `V1-V1'

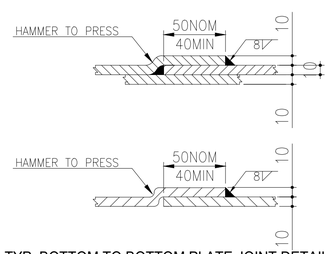


DETAIL-`D1'

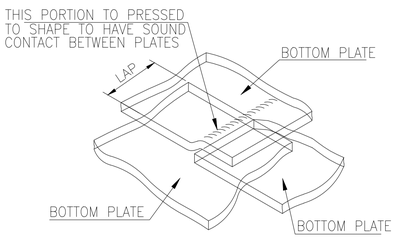
CURB ANGLE TO SHELL & ROOF JOINT DET.



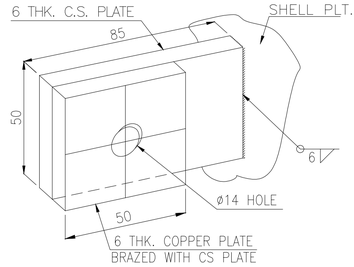
TYP. DETAIL OF BOTTOM SUMP



TYP. BOTTOM TO BOTTOM PLATE JOINT DETAIL

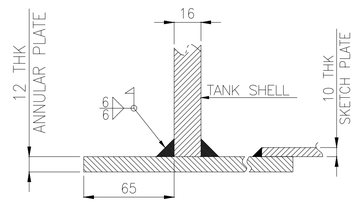


THREE PLATE LAP JOINT DETAIL



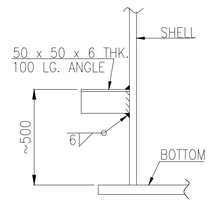
DETAIL OF EARTHING BOSS

(QTY. 3 NOS)



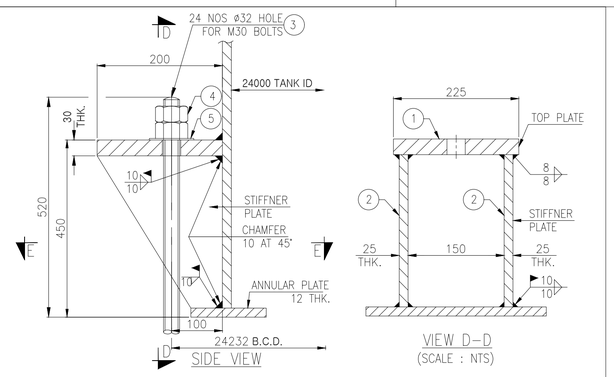
DETAIL 'D2'

BOTTOM TO SHELL PLATE JOINT



SETTLEMENT MARKER

(QTY. 15 NOS)



VIEW D-D

(SCALE : NTS)

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
1	06-06-2022	REVISED FOR PAINTING SCHEDULE TABLE AND ISSUED FOR TENDER			
0	21-05-2022	DRAWING USSED FOR REVIEW			

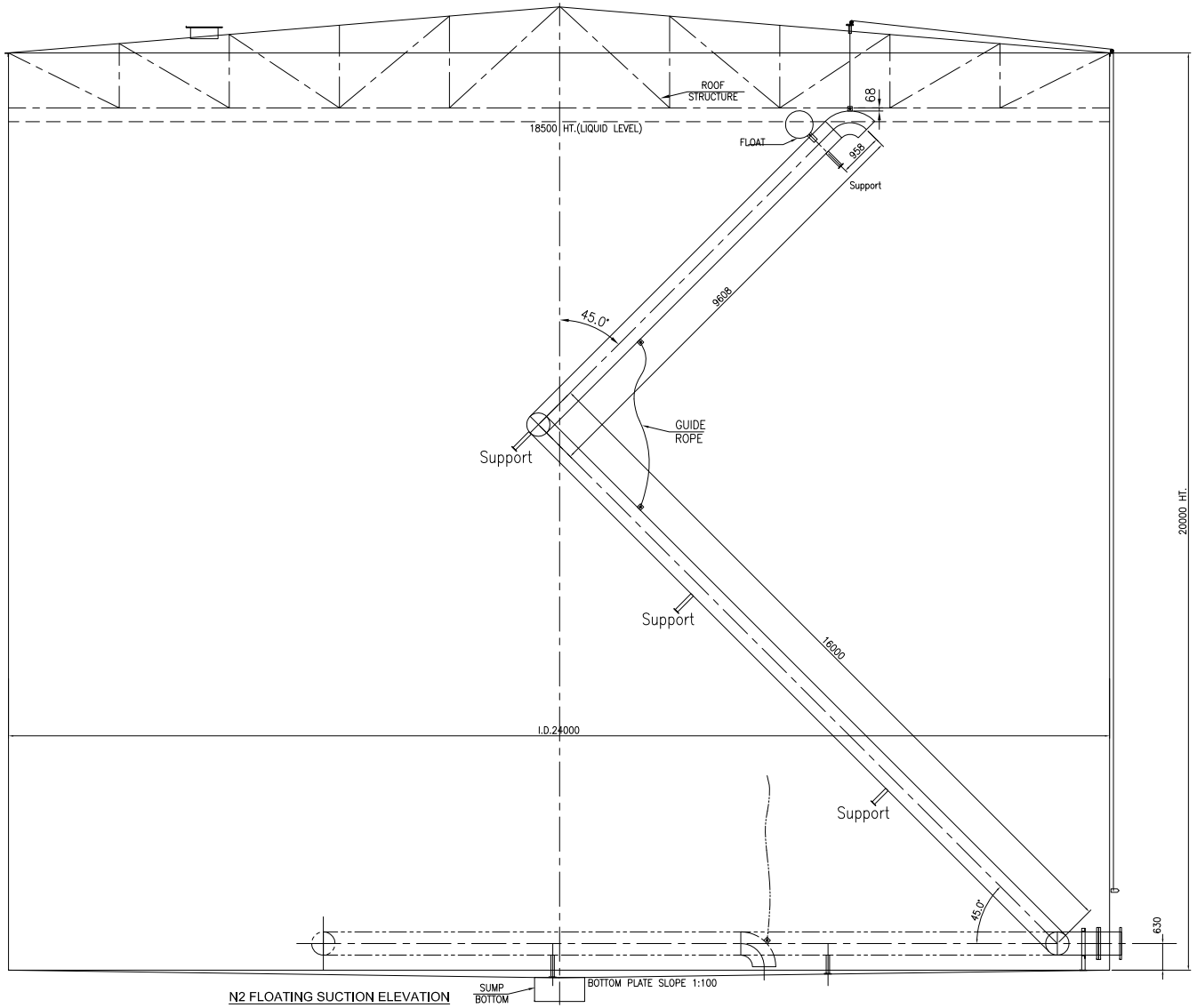
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000KL ABOVE GROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

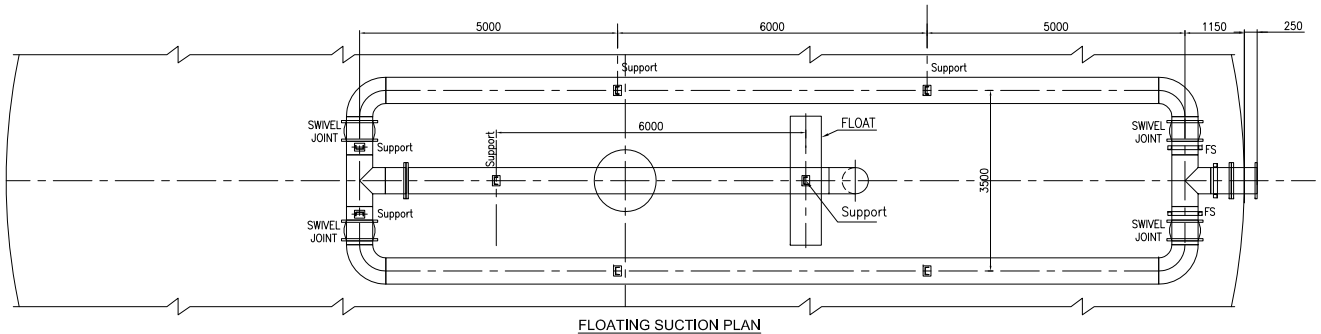
EPCC : SAGA GLOBAL CONSULTANTS

TITLE : GENERAL ARRANGEMENT DRAWING FOR ATF TANK 24.000 MTR DIA. x 20.000 MTR HT.

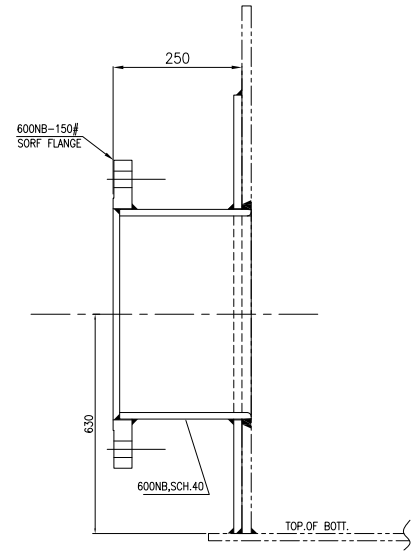
DRAWING No.: DAFFPL-SGC-DWG-210 | SHEET: 1of1 | REV. 0 | SCALE : 1:100



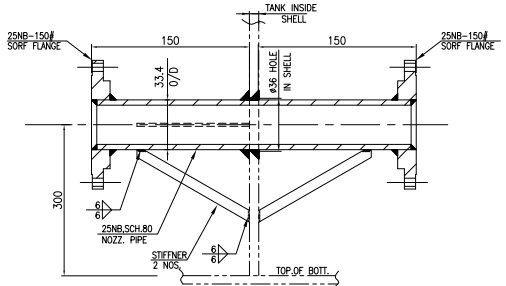
N2 FLOATING SUCTION ELEVATION



FLOATING SUCTION PLAN



N2-600NB INLET



N7A/B/C-25NB SAMPLING (BOT,MIDDLE & TOP)
(QTY-1NO./PER TANK)

N O T E S :-

1) ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE SPECIFIED.
2) ALL FABRICATED NOZZLES SHALL BE 100% RADIOGRAPHIED.
3) ALL WELDS ARE TO TESTED AS PER DESIGN CODE API-650 LATEST EDDITION.
4) R.F PADS AND SORF FLANGES SHALL BE PNEMATICALLY TESTED AT 1.05 KG/SQ.CM WITH SOAP SOLUTION BEFORE HYDRO TEST OF THE TANK.
5) REINFORCEMENT PLATES SHALL HAVE OUTER RADIUS OF TANK.
6) ALL FLANGES SHALL BE ASME B-16.5 UNLESS OTHERWISE STATED.
7) GASKET CONTACT FACES SHALL BE SERRATED FINISH AARH 125.
8) REFER G.A. DRAWING FOR GENERAL NOTES AND PAINTING.
9) ALL TELL TALE HOLES SHALL BE ON HORIZONTAL CENTER LINE.

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	08-06-2022	ISSUED FOR REVIEW	DCM	AP	SKG

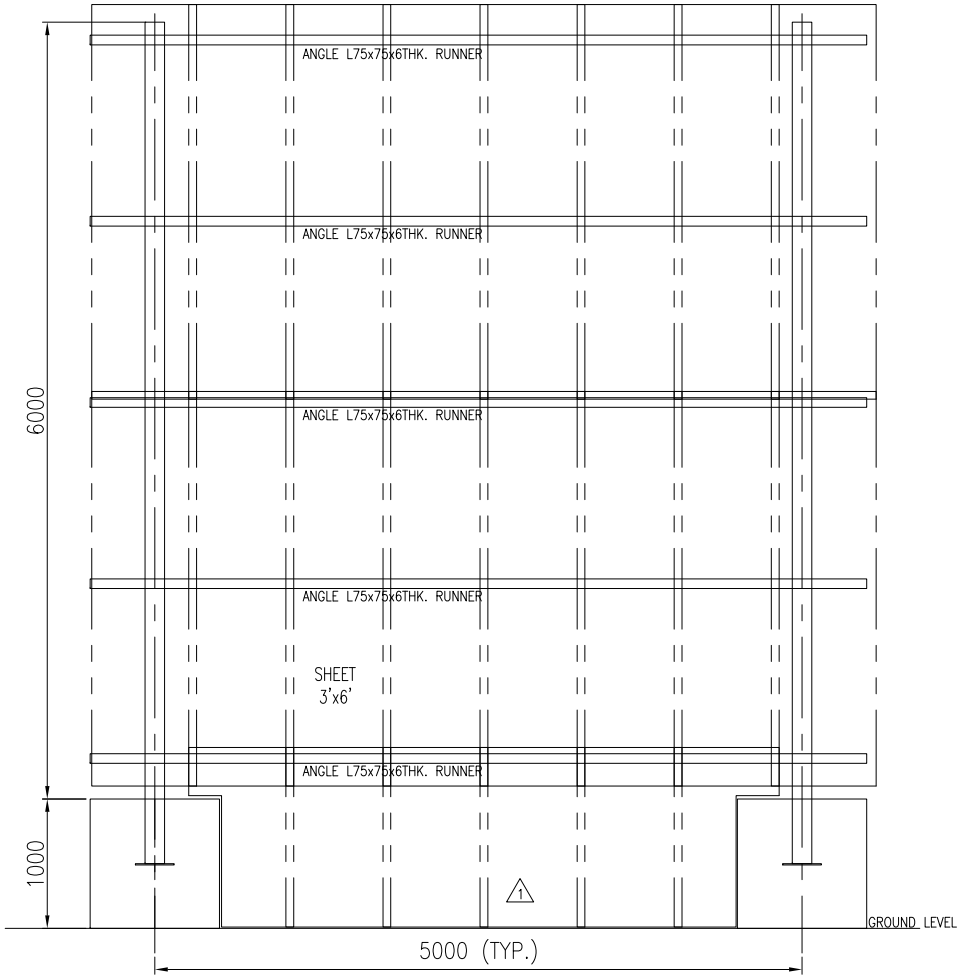
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000KL ABOVE GROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

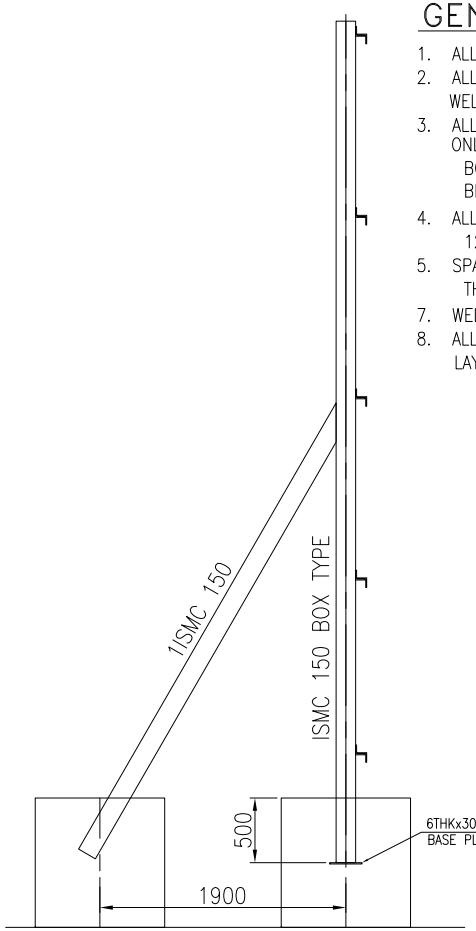
EPCC : SAGA GLOBAL CONSULTANTS

TITLE : N2 FLOATING SUCTION & NOZZLE DETAILS

DRAWING No.: DAFFPL-SGC-DWG-211 | SHEET: 1/1 | REV. 0 | SCALE : 1:50



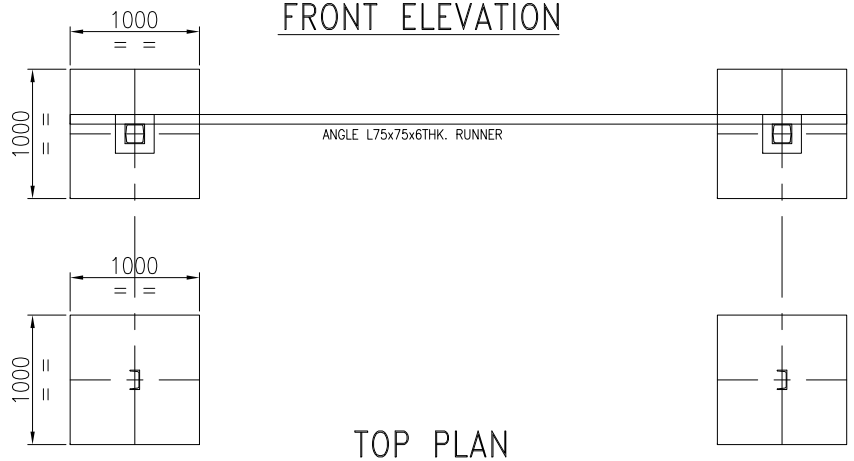
FRONT ELEVATION



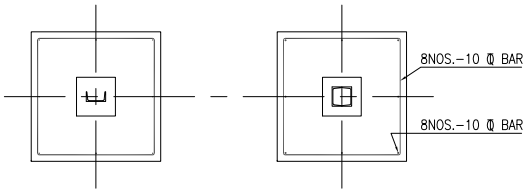
SIDE VIEW

GENERAL NOTES:–

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
2. ALL JOINTS ARE WELDED JOINTS WITH 6 mm. THICK CONTINUOUS FILLET WELD UNLESS OTHERWISE SPECIFIED. WELD SIGN NOT SHOWN FOR CLARITY.
3. ALL HOLES SHOWN ARE 22 & 27 ø FOR M–20 & 25 ERECTION BOLTS ONLY AND AFTER.
   BOLTS ONLY AND AFTER ERECTION AND ALIGNMENT THE JOINT SHALL BE WELDED AS PER NOTES 2 U.O.N..
4. ALL STRUCTURAL MEMBERS SHALL HAVE A MINIMUM CONTACT LENGTH OF 125 mm. TO GUSSET PLATE UNLESS OTHERWISE SPECIFIED.
5. SPACER PLATES SHALL BE PROVIDED TO DOUBLE ANGLES OF EQUAL THICKNESS OF GUSSET PLATE AT 600 SPACING APPX. (MAX.)
7. WELDING ELECTRODES SHALL CONFORM TO IS : E–6013.
8. ALL INCLINED LENGTH AND SIZE OF GUSSET PLATE BY ACTUAL LAYOUT BEFORE CUTTING FOR FABRICATION AND EXECUTION.



TOP PLAN



RCC FOUNDATION DETAIL

CONCRETE GRADE M20

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
1	06-06-2022	HEIGHT OF BARICADING SHEET REVISED & ISSUED FOR TENDER	DCM	AP	SKG
0	21-05-2022	DRAWING USSED FOR REVIEW	DCM	AP	SKG

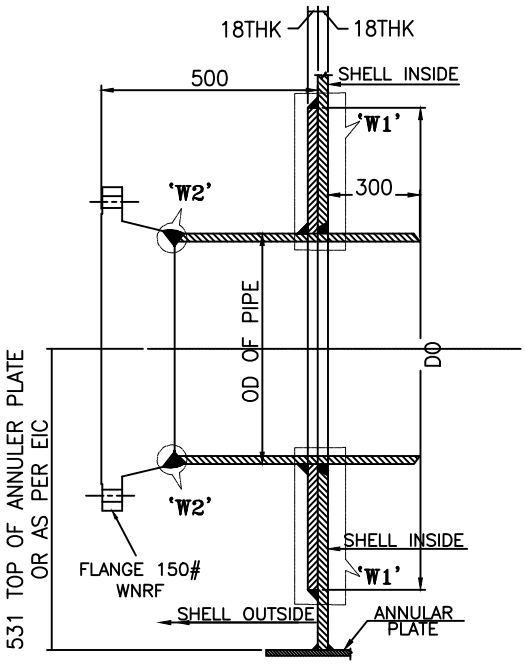
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

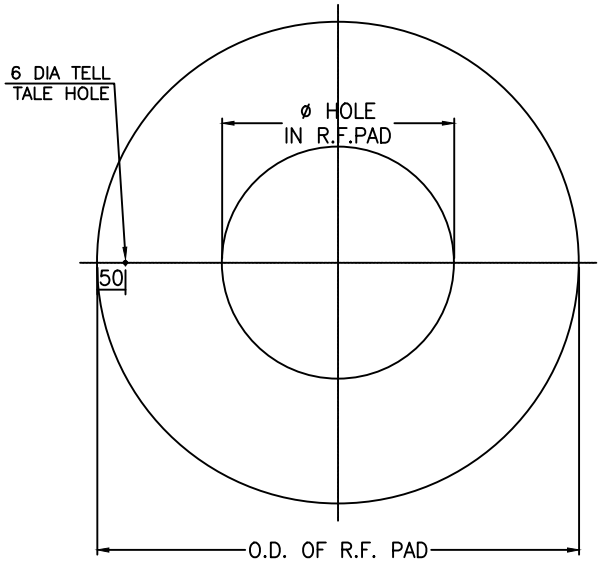
PROJECT : CONSTRUCTION OF 9000KL ABOVE GROUND ATF STORAGE TANK AT DAFFPL FUEL FARM

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : FABRICATION DETAIL OF BARICADING WALL 6.0MTR HEIGHT

DRAWING No.: DAFFPL–SGC–DWG–212 | SHEET: 1of1 | REV. 1 | SCALE : 1:20





DETAILS OF R.F. PAD

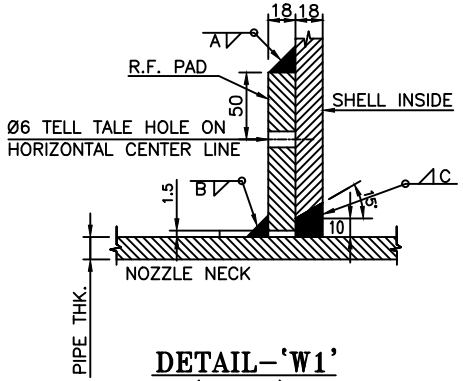
(R.F. PAD SHALL BE ROLLED TO SUIT TANK OUTSIDE RADIUS)

(⟵ ROLLING DIRECTION)

GENERAL NOTES:-

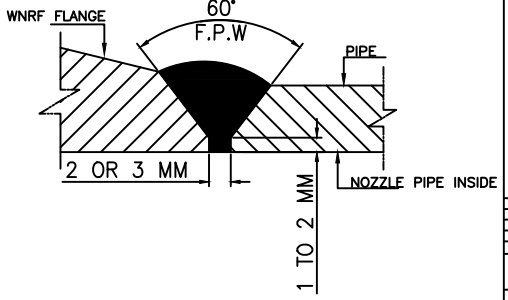
01. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
02. DIMENSIONS A, B & C SHALL BE AS PER TABLE 5.7a OF API 650.
03. WNRF FLANGE SHALL BE AS PER ASTM A 105, CLASS 150 & DIMENSIONS AS PER ANME B 16.5 (RAISED FACE TO AARH 125)

SIZE	OD	DO
24"	609.6	1255
16"	406.4	850
10"	273.0	585



DETAIL–'W1'

(TYPICAL)



DETAIL–'W2'

(TYPICAL)

REV	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
0	09.04.2022	ISSUED FOR TENDER	NSA	DR	SKJ

CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ATF STORAGE TANK

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : TYPICAL NOZZLE DETAILS

DRAWING No.: DAFFL-SGC-DWG- 216 | SHEET: 1/1 | REV. 0 | SCALE : N.T.S.

TO NEW CONTROL ROOM
PJB-3
CJB-1
TO NEW CONTROL ROOM
CJB-3
TO NEW CONTROL ROOM
PJB-1
TO NEW CONTROL ROOM
CJB-4
DAFFPL-PID-001 SH.-1 OF 2
DAFFPL-PID-001 SH.-1 OF 2
NEW WORK
PJB-1
CJB-4
TO NEW CONTROL ROOM
TO NEW CONTROL ROOM

VF - 202
20M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-6060KL

VF - 201
20M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-6060KL

VF - 206
24M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-9000KL

VF - 207
24M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-9000KL

RADAR (TYP 2 NOS)
AIR VENT 6"ø (TYP 8 NOS.)
MANHOLE 20"ø (TYP 2 NOS.)
ROSOV
DBBV
SAMPLE POINT
(LOW POINT DRAIN)
(PRODUCT DRAIN)

DRAIN TO UG 211/212
FROM FWS - 311/314
FROM FWS - 313/314
FROM FWS - 311/312
TO PUMP HOUSE
DRAIN LINE
BY PASS LINE

VF - 203
20M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-6060KL

VF - 204
20M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-6060KL

VF - 205
24M ØX20M HT.
PRODUCT-ATF CLASS 'B'
CAPACITY-9000KL

CJB-2
PJB-2
CJB-5
PJB-4
CJB-6
TO NEW CONTROL ROOM
TO NEW CONTROL ROOM

LEGENDS:-

- GATE VALVE
- CHECK VALVE
- M — MOTOR OPERATED VAVLE
- ROSOV — REMOTE OPERATED SHUT OF VALVE
- EXPANSION JOINT BELLOWS
- CONCENTRIC REDUCER
- DBBV — DOUBLE BLOCK AND BLEED VALVE
- CJB — CONTROL JUNCTION BOX
- PJB — POWER JUNCTION BOX
- INSTRUMENT CABLE
- POWER CABLE

02-JETA1-5LXGR42-600-01-04

- TANK NO
- MAIN HEADRE NO
- PIPE SIZE
- MATERIAL CODE
- FLUID SERVICE
- PIPE DESCRIPTION

PIPE DESCRIPTION
01- TANK RECEIPT FROM BRIJWASAN
02- T2 PUMP SECTION HEADER
03- T2 PUMP DISCHARGE HEADER
04- PUMP MINIMUM FLOW RETURN LINE
05- PIPE TO UNDERGROUND PRODUCT RECOVERY TANK
07- T3 PUMP DISCHARGE HEADER
11- TANK RECEIPT FROM TRUCK
12- T3 RISER PIPE

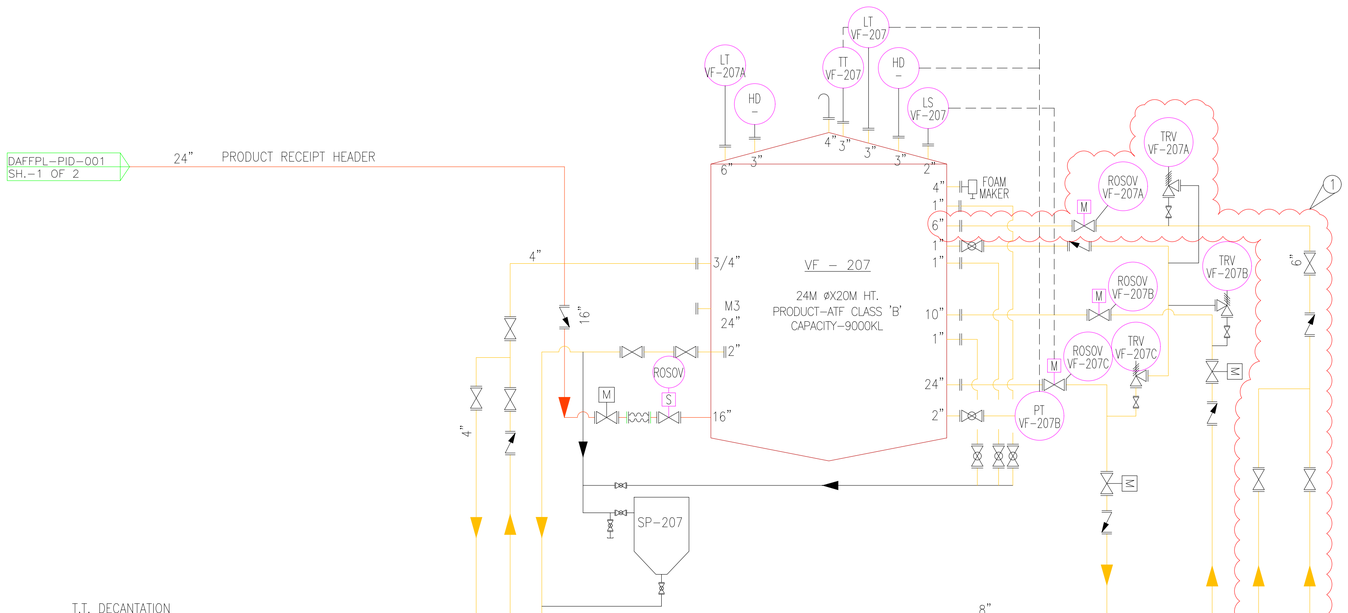
REV.	DATE	DESCRIPTION	DRN BY	CHKD BY	APPD. BY
5	06-06-2022	ISSUED FOR APPROVAL	MK	AP	SKJ
4	12-07-2021	ISSUED FOR APPROVAL	KHP	DR	SKJ
3	30-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
2	21-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
1	19-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
0	04-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ

DELHI AVIATION FUEL FACILITY (P) LTD.
SHAHABAD MOHMADPUR, SECTOR-23, DWARKA, NEW DELHI, INDIA

CONSULTANT: SAGA GLOBAL CONSULTANTS

TITLE: PRELIMINARY P&ID

SHEET NO: 1 OF 2 | SHEET SIZE: A2 | SCALE: NTS
DRAWING NO: DAFFPL-PID-001 | REV: 5



LEGENDS:-

- GATE VALVE
- CHECK VALVE
- MOTOR OPERATED VAVLE
- REMOTE OPERATED SHUT OF VALVE
- EXPANSION JOINT BELLOWS
- CONCENTRIC REDUCER
- DBBV — DOUBLE BLOCK AND BLEED VALVE
- CJB — CONTROL JUNCTION BOX
- PJB — POWER JUNCTION BOX
- INSTRUMENT CABLE
- POWER CABLE

02-JETA1-5LXGR42-600-01-04

- TANK NO
- MAIN HEADRE NO
- PIPE SIZE
- MATERIAL CODE
- FLUID SERVICE
- PIPE DESCRIPTION

PIPE DESCRIPTION
01- TANK RECEIPT FROM BRIJWASAN
02- T2 PUMP SECTION HEADER
03- T2 PUMP DISCHARGE HEADER
04- PUMP MINIMUM FLOW RETURN LINE
05- PIPE TO UNDERGROUND PRODUCT RECOVERY TANK
07- T3 PUMP DISCHARGE HEADER
11- TANK RECEIPT FROM TRUCK
12- T3 RISER PIPE

NOTES:-

1) AT END POINT OF DELIVERY HEADER SAMPLING CONNECTION & CIVIL STRUCTURE AS PER EXISTING IS REQUIRED.

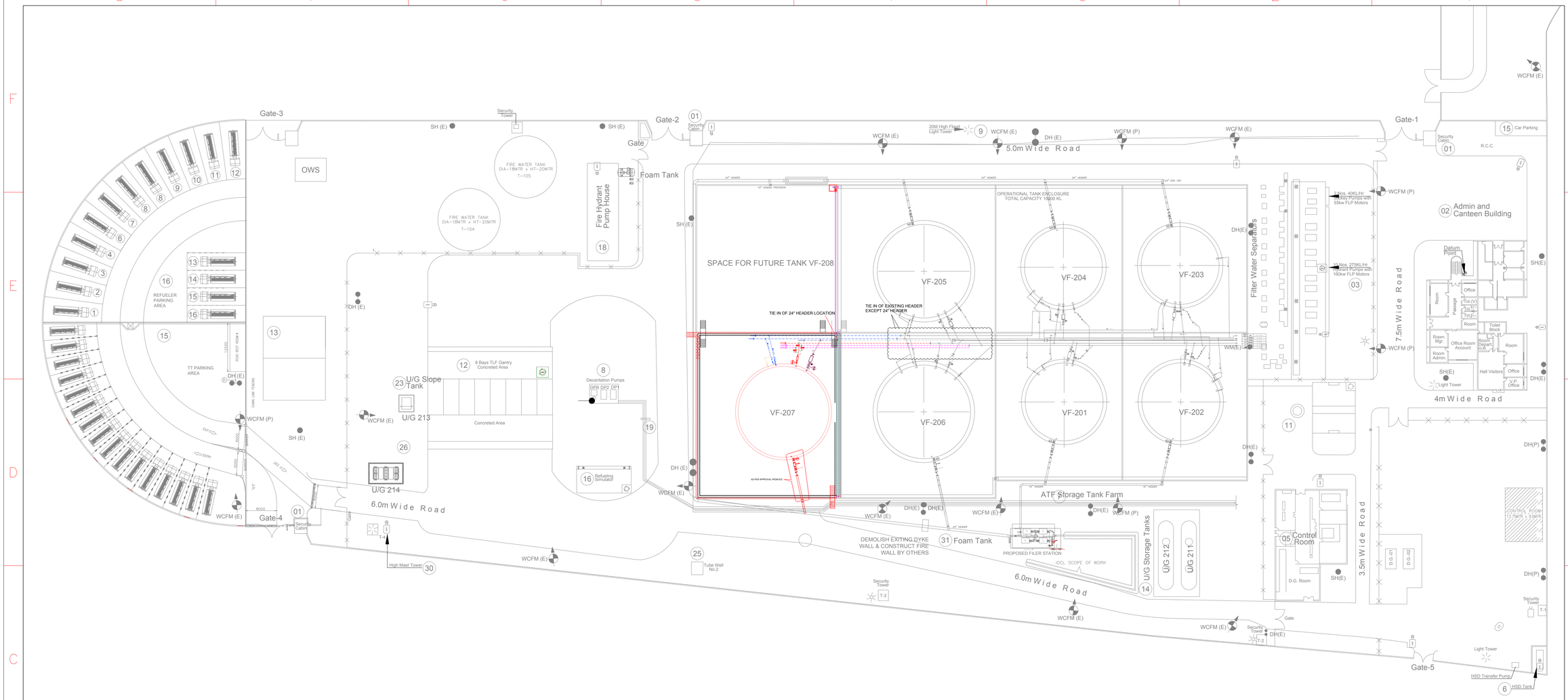
REV.	DATE	DESCRIPTION	DRN BY	CHKD BY	APPD. BY
5	09-06-2022	ISSUED FOR APPROVAL	MK	AP	SKJ
4	12-07-2021	ISSUED FOR APPROVAL	KHP	DR	SKJ
3	30-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
2	21-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
1	19-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ
0	04-12-2020	ISSUED FOR REVIEW	KHP	DR	SKJ

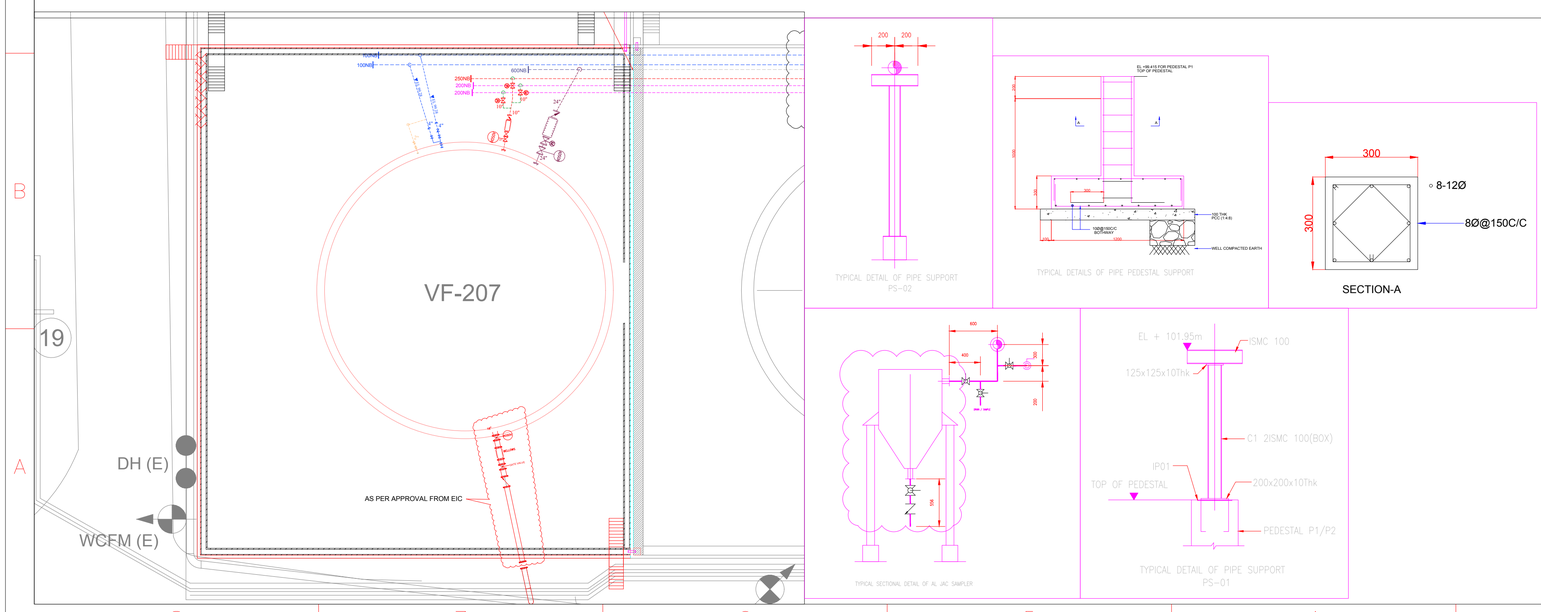
DELHI AVIATION FUEL FACILITY (P) LTD.
SHAHABAD MOHMADPUR, SECTOR-23, DWARKA, NEW DELHI, INDIA

CONSULTANT: SAGA GLOBAL CONSULTANTS

TITLE: PRELIMINARY P&ID

SHEET NO: 2 OF 2 | SHEET SIZE: A2 | SCALE: NTS
DRAWING NO: DAFFPL-PID-001 | REV: 5





REFERENCE DRAWING :

DRAWING NO	TITLE
DAFFPL-SGC-DWG-201	SCOPE EXTENT FOR ADDITIONAL TANK AT DAFFPL FUEL FARM
DAFFPL-SGC-DWG-202	DYKE WALL PLAN AND RC DETAILS

NOTES:
1. The vent at the highest point and the drain at the lowest point, shall be provided in the pipe lines.
2. All drain shall be routed to nearest drain pit or as per instruction of engineer in-charge (EIC).
3. Pipe shall be supported as per applicable codes and standards as per instruction of EIC.
4. at end point of delivery header sampling connection & civil structure as per existing is required.

REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
1	08.06.2022	REVISED AND ISSUED FOR TENDER	MK	AP	SKJ
0	18.05.2022	ISSUED FOR TENDER	MK	AP	SKJ

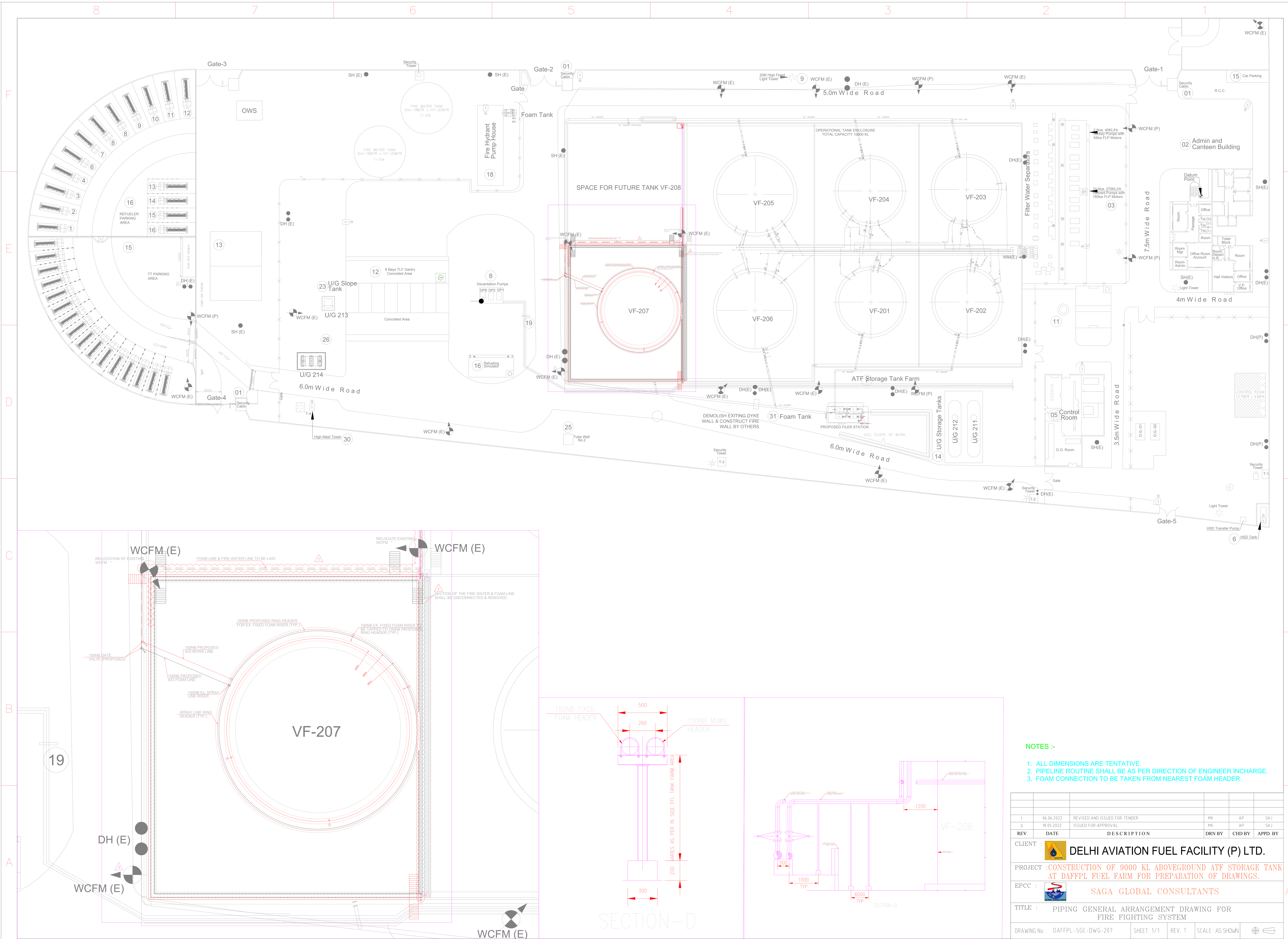
CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : PIPING GENERAL ARRANGEMENT DRAWING

DRAWING No.: DAFFPL-SGC-DWG-206	SHEET: 1/1	REV. 1	SCALE : AS SHOWN



REV.	DATE	DESCRIPTION	DRN BY	CHD BY	APPD. BY
1	06.06.2022	REVISED AND ISSUED FOR TENDER	MK	AP	SKJ
0	18.05.2022	ISSUED FOR APPROVAL	MK	AP	SKJ

CLIENT : DELHI AVIATION FUEL FACILITY (P) LTD.

PROJECT : CONSTRUCTION OF 9000 KL ABOVEGROUND ATF STORAGE TANK AT DAFFPL FUEL FARM FOR PREPARATION OF DRAWINGS.

EPCC : SAGA GLOBAL CONSULTANTS

TITLE : PIPING GENERAL ARRANGEMENT DRAWING FOR FIRE FIGHTING SYSTEM

DRAWING No.: DAFFPL-SGC-DWG-207 | SHEET: 1/1 | REV. 1 | SCALE : AS SHOWN

SUMMARY OF PRICE SCHEDULE				
Section	**Description of BOQ**	**Amount in INR**	**Taxes in INR**	**Total Amount in INR**
A	SUPPLY	-	-	-
B	ERECTION, INSTALLATION, TESTING AND COMMISIONING	-	-	-
C	TOTAL IN INR	-	-	-
Total Cost towards Construction of 9000 KL Storage Tank at DAFFFL				**-**

Bill of Quantities- Civil Works Construction of 9000 KL ATF Storage Tanks

Tank foundation, dyke wall,fire break wall, drains, chambers, high mast foundation, earth pits, area grading, PCC flooring, pipe pedestals, underground CS pipe, hume pipe, catwalk platform, walkover staircases, pull pits, duct banks, demolition of existing facilities (tank foundation, dyke wall, dyke drain, high mast foundation and asphalt road) and re-location of existing high mast.

CIVIL WORKS SUPPLY

Sr. No.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE(INR)	AMOUNT(INR)	REFERENCE
A.1	Coarse sand (Zone III)	M3	493		-	
A.2	Earthwork - Sandy loam, sandy gravel free from deleterious organic and petroleum contaminants	M3	908		-	
A.3	Stone Aggregate 50 to 150mm nominal size	M3	265		-	
A.4	Twisted steel/ deformed TMT bars Fe-500D	TON	40		-	
A.5	Providing Sand Bitumen Carpet for Tank VF 207 (75 mm Thick) : 75 mm compacted thickness with bitumen of grade VG-30 @ 5% (percentage by weight of total mix) and lime filler @ 2% (percentage by weight of Aggregate) prepared in Batch Type Hot Mix Plant of 100-120 TPH capacity	M2	477		-	
A.6	Supplying 3mm thick HDPE sheets with manufacturer's test certificate of ISO certified organisation. Each sheet shall be checked for damages, tears etc. by the client engineer at site. Only the fully undamaged sheets shall be accepted	M2	1678		-	
A.7	Supplying ISO certified approved make's UPVC pipe having 1" inner diameter. The brand shall be decided by the client. Manufacturer's test certificate shall be provided. The total length of pipe shall be inspected at site. MS nets having 1mm opening shall also be provided	M	12		-	
A.8	Structural steel such as tees, angles channels and R.S. joists	MT	8		-	
A.9	Supplying, transporting and stacking in designated position 200 NB Schedule 40 CS pipe of approved brand. Manufacturer's test certificates shall be provided. Any damage in the incoming material will lead to rejection. Wrapping and coating materials are also covered in this item's rate.	M	81		-	
A.10	R.C.C. pipes NP2 class 300 mm dia	M	30		-	
A.11	M-60 grade cemetitious grout (Non Shrink)	KG	1609		-	
TOTAL FOR CIVIL WORKS SUPPLY					**-**	

Bill of Quantities- Civil Works Construction of 9000 KL ATF Storage Tanks

Tank foundation, dyke wall,fire break wall, drains, chambers, high mast foundation, earth pits, area grading, PCC flooring, pipe pedestals, underground CS pipe, hume pipe, catwalk platform, walkover staircases, pull pits, duct banks, demolition of existing facilities (tank foundation, dyke wall, dyke drain, high mast foundation and asphalt road) and re-location of existing high mast.

CIVIL WORKS SUPPLY						
Sr. No.	**ITEM DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE(INR)**	**AMOUNT(INR)**	**REFERENCE**
ERECTION, INSTALLATION, TESTING, COMMISSIONING						
Sr. No.	**ITEM DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE(INR)**	**AMOUNT(INR)**	**REFERENCE**
B.1	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) as directed by Engineer-in-charge. All kinds of soil	M3	1056		-	
B.2	Filling with available earth, Soil- Sandy loam, sandy gravel free from deleterious organic and petroleum contaminants, Sand (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering	M3	908		-	
B.3	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, for all leads including all lifts involved.	M3	1056		-	
B.4	Filling with 50 to 150mm coarse aggregate in trenches or embankment in layers (each layer should not exceed 15 cm), with intermediate layer of compacted earth (Soil density of 98%) after every four layers of compacted depth of fly ash, sides & top layer of filling shall be done with earth having total minimum compacted thickness 30 cm or as decided by Engineer -in-charge, including compacting each layer by rolling/ ramming and watering, all complete as per drawing and direction of Engineer-in-Charge	M3	265		-	
B.5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete. **Note**:Filling sand and laying in layers of 200mm, compacted with 16 ton vibratory roller / plate compactor and watering as per the direction of the client site engineer. (All materials, equipment and labour). Four compaction tests need to be carried out in each layer (sand replacement/ core cutter tests). Weight of the compactor shall be decided by the client.	M3	493		-	
B.6	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	M2	1055		-	
B.7	Providing and laying in position ready mixed or site batched design mix cement concrete for plain cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana/Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering and finishing as per direction of the engineer-in-charge; for the following grades of concrete. Concrete of M15 grade with minimum cement content of 240 kg /cum	M3	195		-	
B.8	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for thefollowing grades of concrete. Concrete of M30 grade with minimum cement content of 350 kg /cum	M3	389		-	
B.9	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level. Thermo-Mechanically Treated bars of grade Fe-500D or more.	MT	40		-	
B.10	Erection and fabrication of structural steel items such as base plates, stiffeners, foundation bolts, channels, angles, gratings etc. Client inspection shall be performed at every stage of work. Any quality test/ inspection suggested by the client shall be carried out at site. The rate includes staging, working platforms. Any safety measure suggested by the client such as fall arrestor, lanyard, hard barricading shall be followed	NOS.	1		-	

Bill of Quantities- Civil Works Construction of 9000 KL ATF Storage Tanks

Tank foundation, dyke wall,fire break wall, drains, chambers, high mast foundation, earth pits, area grading, PCC flooring, pipe pedestals, underground CS pipe, hume pipe, catwalk platform, walkover staircases, pull pits, duct banks, demolition of existing facilities (tank foundation, dyke wall, dyke drain, high mast foundation and asphalt road) and re-location of existing high mast.

CIVIL WORKS SUPPLY

Sr. No.	ITEM DESCRIPTION	UNIT	QUANTITY	RATE(INR)	AMOUNT(INR)	REFERENCE
B.11	laying, fitting and erecting underground underground CS pipe as per direction of Engineer Incharge and approved Construction Drawings	NOS.	1		-	
B.12	shifting, laying, fitting and erecting underground underground NP2 pipe as per direction of Engineer Incharge and approved Construction Drawings	NOS.	1		-	
B.13	Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade : Two or more coats on new work Rate includes supply of paints	M2	350		-	
B.14	Painting of structural steel surfaces. The cost includes grit blasting confirming to SA 2.5, supply of primer paint, intermediate paint and final finish paint of coats of zinc ethyl silicate, MIO and polyurethane paint respectively as per approve painting specifications. Approved makes, mix proportions, number of coats required, testing and other steps shall be according to client's QAP and ITP. Material test certificates shall be submitted. Cost includes supplying paints, staging, working platforms and all other safety precautions that need to be taken according to client's HSE manual.	M2	97		-	

Bill of Quantities- Civil Works Construction of 9000 KL ATF Storage Tanks						
Tank foundation, dyke wall,fire break wall, drains, chambers, high mast foundation, earth pits, area grading, PCC flooring, pipe pedestals, underground CS pipe, hume pipe, catwalk platform, walkover staircases, pull pits, duct banks, demolition of existing facilities (tank foundation, dyke wall, dyke drain, high mast foundation and asphalt road) and re-location of existing high mast.						
CIVIL WORKS SUPPLY						
Sr. No.	**ITEM DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE(INR)**	**AMOUNT(INR)**	**REFERENCE**
B.15	Laying sand/stone grit bitumen anti-corrosive layer of 76mm finished thickness consisting of course sand/stone grit mixed with A60/A70 grade bitumen conforming to IS:73 (8 to 10% by Volume) duly compacted with roller. All materials, equipment, machineries and labour shall be arranged by the contractor. 48 radial threads shall be laid for maintaining accuracy in slope	NOS.	1		-	
B.16	Providing and applying HDPE waterproofing membrane. The operation shall be carried out after scrapping and properly cleaning the surface to remove loose particles with wire brushes, complete in all respect as per the direction of Engineer-in-Charge.	M2	1678		-	
B.17	Fixing 1" PVC pipe in the ring beam as per the drawing including all equipment, labour. The inner opening of each pipe shall be closed with 5mm to 10mm coarse aggregate secured in place by an MS net having openings of size 1mm. The net shall be securely fastened to the pipe	NOS.	1		-	
B.18	Demolishing R.C.C. work by mechanical means and stockpiling at designated locations and disposal of dismantled materials, stacking serviceable and unserviceable material separately including cutting reinforcement bars.	M3	122		-	
B.19	**a.** Demolishing cement concrete manually/ by mechanical means including disposal of material as per direction of Engineer - in - charge. Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix) **b.** Carriage of rubbish	M3	21		-	
B.20	Carriage of sand- **Note**: for carriage of sand of existing tank foundation outside site	M3	377		-	
B.21	Dismantling of flexible pavement (bituminous courses) by mechanical means and disposal of dismantled material, as per direction of Engineer-in-charge.	M3	50		-	
B.22	Providing and injecting approved grout in proportion recommended by the manufacturer into cracks/honey-comb area of concrete/ masonry by suitable gun/pump at required pressure including cutting of nipples after curing etc. complete as per directions of Engineer-in- Charge. Stirrer mixed SBR Polymer (of approved make) modified Cement slurry made with Shrinkage Compensating Cement in concrete/RCC work.	KG	1609		-	
TOTAL FOR CIVIL WORKS INSTALLATION					**-**	
GRAND TOTAL FOR CIVIL SUPPLY & INSTALLATION WORKS					**-**	

Notes:

1) Dewatering required is to be carried out by the contractor and the rate shall include the cost of dewatering.

2) Quantities shown above are estimated to arrive at the total value of the contract.

Construction of 9000 KL ATF Storage Tank at DAFFPL Fuel Farm

Bill of Quantity - Mechanical Tankage Works

Supply of Material - Mechanical Works

SR. NO.	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (INR)	TOTAL AMOUNT (INR)	REMARKS
	SUPPLY OF TANKAGE MATERIAL					
A.1	Supply of Steel Plates of Material Specification - IS 2062 Gr B for fabrication of Shell, Bottom & Annular, and Roof of the Cone Roof Vertical Tank. The scope also includes supply of RF Pads, pad plates, base plates of thickness to be suited to site conditions for fabrication of shell & roof nozzles.	MT	220.00		-	
A.2	Supply of the Structural Steel for the Cone Roof Vertical tank such as trusses, central drum, columns, base plates, cross-girders, crown plates, rafters, curb angle. It also includes supply of compression rings, wind girders, maintenance platforms with cage ladders for foam pourer maintenance, bracings, supports and gussets for fire water sprinklers.	MT	28.00		-	
A.3	Spiral Staircase & Handrails: Supply of Electro-forged dipped galvanized stair steps & gratings for interlanding & top platforms, supply of handrails along the staircase and at the top of the tank for roof access. This includes suppy of all the associated items - vertical posts, knee rail flats, toe guards, etc. The scope also includes the gratings & handrails for valve operation & maintenance platforms near the tank operational area.	MT	4.00		-	
A.4	Supply of the flanges of the following sizes for Tank appurtenances/ nozzles along with Spiral wound gaskets and bolting assembly. Material - ASTM A105, Class 150.					
A4.1	M1 A/B: Shell Manholes; - 900 NB (Cover Flange & Bolting flange)	NOS.	2.00		-	
A4.2	M2 A/B: Roof Manholes - 600 NB (Cover Flange & Bolting flange)	NOS.	2.00		-	
A4.3	Tank Inlet (Product Receipt)- 400 NB, Class 150	NOS.	1.00		-	
A4.4	Tank outlet - 600 NB, Class 150	NOS.	1.00		-	
A4.5	Product Receipt from 10" Pipeline- 250 NB, Class 150	NOS.	1.00		-	
A4.6	N4: Product Draw off ; N9 A/B/C/D: Foam Pourers - 100 NB, Class 150	NOS.	6.00		-	
A4.7	N5: Product Drawoff; N7: Pressure Transmitter; N13- Temperature Transmitter; N14: Level Switch- 50 NB, Class 150	NOS.	4.00		-	
A4.8	N6: Water Drawoff- 80 NB, Class 150	NOS.	1.00		-	
A4.9	N8A/B/C: Level Sample; N10: Pressure Relief line - 25 NB, Class 150	NOS.	4.00		-	
A4.10	N11: Servo gauge (Level Transmitter); N15 A/B/C/D: Goose neck type vents- 150 NB, Class 150	NOS.	6.00		-	
A4.11	N12: Radar type Level Transmitter- 50 NB-Class 150	NOS.	2.00		-	
A4.12	N13: Spare Nozzle - 200 NB	NOS.	1.00		-	
A.5	Supply of Floating suction unit: Double-arm floating suction with swivels and jumpers, 600 NB Floating Suction Articulated type, Double Arm.	NO.	1.00		-	
A.6	Supply of closed sample system Sampling Jar Aljac, 50 Litre capacity, Stainless Steel base, complete with Stainless Steel support framework, glass tube, lift and turn lid mechanism, inlet flanged 1 inch ANSI B16.5 150lb raised face, outlet flanged 1 1/2 inch ANSI B16.5 150lb raised face, fitted with integral close coupled outlet valve, spring return low point outlet sample valve. and spring return inlet valve.	NO.	1.00		-	
A.7	Supply of Spark -proof Gauge hatch of 8" for product sampling . The painting code shall be as per the scheme of existing tanks / Painting Specifications	NO.	1.00		-	
A.8	Supply of Atmospheric goose-neck free vent of 6" size with SS wire mesh.	NOS.	4.00		-	
A.9	Supply of Emergency vent due to excessive internal pressure caused by exposure to fire, to be installed in one of the roof manholes. It shall be suitably sized by the contractor.	NOS.	1.00		-	
A.10	Supply of UL Listed Foam Chamber Unit - Foam chamber, air strainer, orifice plate, foam proportioner as per existing	NOS.	4.00		-	
A.11	Supply of Foam Deflector for directing the foam against the storage tank.	NOS.	4.00		-	
	TOTAL SUPPLY OF MATERIAL - MECHANICAL WORKS				**-**	

SR. NO.	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (INR)	TOTAL AMOUNT (INR)	REMARKS
	FABRICATION, ERECTION/ INSTALLATION, TESTING & COMMISSIONING OF TANKAGE WORKS					
B	**FABRICATION, ERECTION / INSTALLATION OF TANKAGE MATERIAL**					
B.1	Fabrication, erection, welding and testing and commissioning of bottom, shell, and cone roof plates, sumps, pad plates, dip plates, backing strips, pipe supports, Tank Nozzles including nozzle pipes, all reinforcing plates, etc including cutting, squaring, bevelling, rolling, etc., by hydraulic jacking erection method, as per API 650 standard, specifications and tender drawings provided. Scope includes lifting, stacking, loading, unloading of steel plates at & within site and with all other items such as labour, materials, consumables, water, power, etc. supplied by the contractor. The scope of work shall include vaccum box testing for bottom & roof plates, DP test for nozzle welds, Chalk kerosene test for shell-bottom joints, fabrication and welding of RF Pads, pad plates, base plates for nozzles. Also shall include Radiography quality welding and carrying out spot radiography inspection of welds etc as per enclosed specification.	MT	220.00		-	
B.2	Fabrication, erection and welding of the structurals for the Cone Roof vertifical tank such as trusses, central drum, columns, base plates, cross-girders, crown plates, rafters, curb angle. It also includes supply of compressor rings, wind girders, maintenance platforms with cage ladders for foam pourer, bracings, supports and gussets for Fire water sprinklers. The scope also includes applying a priming coat of approved steel primer etc., as required.	MT	28.00		-	
B.3	Fabrication, erection and welding of Electro-forged dipped galvanized stair steps & gratings for interlanding & top platforms, and handrails along the staircase and at the top of the tank for roof access	MT	4.00		-	
B.4	Installation of Double-arm floating suction with swivels and jumpers, 600 NB Floating Suction Articulated Type, Double Arm.	NO.	1.00		-	
B.5	Erection, Installation and Testing of Aljac closed sample system, 50 Litre capacity, Stainless Steel base, complete with Stainless Steel support framework, glass tube, lift and turn lid mechanism, inlet flanged 1 inch ANSI B16.5 150lb raised face, outlet flanged 1 1/2 inch ANSI B16.5 150lb raised face, fitted with integral close coupled outlet valve, spring return low point outlet sample valve, and spring return inlet valve.	NO.	1.00		-	
B.6	**Surface Preparation and Painting of Tanks** Scope of work involves surface preparation, supply & application of primer and finish coats for all the tanks (internal & external) and associated works but not limited to spiral stairways/ cages, hand rails, platforms, wind girders etc Construction of sandblasting shed of required capacity, Paint shed with temperature control, providing required tools and tackles, skilled technicians, shifting of finished products, storage of finished products, transport finished products to the project premises as per priority, final touch at site, scaffolding arrangement, providing access for inspection at all elevations etc. Painting shall be in accordance with the painting specification.					
B.6.1	Surface Preparation : SA 2 1/2 (Grit/Abrasive Blasting) - SSPC-SP-10 - Refer to the painting specification document for details.	Sq.M	5,320.00		-	
B.6.2	Internal and External Painting for Shell (Surface preparation - Sa 2 1/2) - Refer to the painting specification document for details.	Sq.M	3,020.00		-	
B.6.3	Internal and External Painting for Bottom (Surface preparation - Sa 2 1/2) - Refer to the painting specification document for details.	Sq.M	1,000.00		-	
B.6.4	Internal and External Painting for Roof (Surface preparation - Sa 2 1/2) - Refer to the painting specification document for details.	Sq.M	1,000.00		-	
B.6.5	Painting of Structural steel: Spiral stairways, Cage, Hand rails, Platforms etc. - Refer to the painting specification document for details.	Sq.M	300.00		-	
B.7	The item includes lettering Client/ Owner's Logo, Client/ Owner's name in English & Hindi, the tank capacity, tank number, date of painting, date of commissioning, date of calibration, next calibration due on etc, The rate includes providing necessary equipment, paint, labour, materials, etc., complete in all respects as per enclosed specification and instructions at site.	LS	1.00		-	
B.8	Installation of Spark-proof Gauge hatch of 8" for product sampling. The painting code shall be as per the scheme of existing tanks.	NO.	1.00		-	
B.9	Installation and welding of all the supplied flanges of the following for appurtenances/ nozzles along with Spiral wound gaskets and bolting assembly.					
B.9.1	M1 A/B: Shell Manholes; - 900 NB (Cover Flange & Bolting flange)	NOS.	2.00		-	
B.9.2	M2 A/B: Roof Manholes - 600 NB (Cover Flange & Bolting flange)	NOS.	2.00		-	
B.9.3	Tank Inlet (Product Receipt)- 400 NB, Class 150	NOS.	1.00		-	
B.9.4	Tank outlet - 600 NB, Class 150	NOS.	1.00		-	
B.9.5	Product Receipt from 10" Pipeline- 250 NB, Class 150	NOS.	1.00		-	
B.9.6	N4: Product Draw off ; N9 A/B/C/D: Foam Pourers - 100 NB, Class 150	NOS.	6.00		-	
B.9.7	N5: Product Drawoff; N7: Pressure Transmitter; N13- Temperature Transmitter; N14: Level Switch- 50 NB, Class 150	NOS.	4.00		-	
B.9.8	N6: Water Drawoff- 80 NB, Class 150	NOS.	1.00		-	
B.9.9	N8A/B/C: Level Sample; N10: Pressure Relief line - 25 NB, Class 150	NOS.	4.00		-	
B.9.10	N11: Servo gauge (Level Transmitter); N15 A/B/C/D: Goose neck type vents- 150 NB, Class 150	NOS.	6.00		-	
B.9.11	N12: Radar type Level Transmitter- 50 NB-Class 150	NOS.	2.00		-	
B.9.12	N13: Spare Nozzle - 200 NB	NOS.	1.00		-	
B.10	Installation of Atmospheric goose-neck free vent of 6" size with SS wire mesh.	NOS.	4.00		-	
B.11	Installation of Emergency tank vent to be installed in one of the roof manholes of the tank	NOS.	1.00		-	
B.12	Installation of UL Listed Foam Chamber Unit - Foam chamber, air strainer, orifice plate, foam proportioner as per existing	NOS.	4.00		-	
B.13	Installation of Foam Deflector for directing the foam against the storage tank	NOS.	4.00		-	
B.14	Calibration of tanks - Bottom calibration with actual physical measurement by water meter & tank shell by strapping periphery of different strakes above and below the horizontal weld joints (or) by using optical ranging method. Item includes cost towards statutory payment to be made to the authorities and all other incidental costs. Item includes preparation & submission of calibration charts in quadruplicate duly approved by the tank calibration authority.	LS	1.00		-	
B.15	Hydrotesting of Vertical Tank including making arrangement for filling water into the tank by pumping water by flame-proof pump, making all the arrangements including piping, cables, fixing & removing of flanges, gaskets, flexible hose etc. transfering water to other tanks or de-watering into the drain, boxing up of tank including supply of new high tensile bolts/nuts of appropriate size of approved make, 3 mm CAF gasket of approved makes for shell manholes etc. complete in co-ordination with the location.	LS	1.00		-	
B.17	Soak Test of Tank: Sample Collection, processing at DGCA approved Lab & submission of report to DAFFPL for product sampling during soak testing & flushing procedure. Cost of retesting is included in this scope,in case initial sample fails testing. (Test A & Test B) both are included this.	LS	1.00		-	
B.18	Supply, Erection and Installation of Hot Barricading wall near the tank (VF-207) in order to protect hot works from the operational tank dyke area.	LS	1.00		-	
	TOTAL FABRICATION, ERECTION/ INSTALLATION, TESTING & COMMISSIONING OF TANKAGE MECHANICAL WORKS				**-**	
	GRAND TOTAL MECHANICAL TANKAGE WORKS (SUPPLY + ERECTION INDTALLATION TESTING & COMMISSIONING)				**-**	
	Abbreviations: MT - Metric Tonnes; Sq.M - Square Meter; LS: Lumpsum					

NOTES	
1	* The proposed size of the radar gauge transmitter is based on the available reputed make models, kindly check and confirm the same.
2	The supply of nozzle pipes - dip pipes, water draw-off pipes, etc. have been considered in the Piping Bill of Quantity
3	Fire-fighting accessories on tank shell - Cooling water rings, sprinklers have been considered in the Piping Bill of Quantity
4	Civil Works required for Ring Beam Foundation, Bitumen carpet has been considered in Civil Works Bill of Quantity

Construction of 9000 KL ATF Storage Tank at DAFFPL Fuel Farm

Bill of Quantity - Piping Works (ATF & Fire-fighting)

Supply of Material - Piping Works

SR. NO.	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (INR)	TOTAL AMOUNT (INR)
	SUPPLY OF PIPING MATERIALS				
	SERVICE - ATF				
A.1	**Supply of Carbon Steel Pipe, Dimension Std- ASME B16.30, API 5L Grade B**				
A.1.1	600 NB, with Internal Epoxy coating, Sch. Std, BE, ERW	M	48		-
A.1.2	400 NB, with Internal Epoxy coating,Sch. Std, BE, ERW	M	18		-
A.1.3	250 NB, with Internal Epoxy coating, Sch. Std, BE, ERW	M	42		-
A.1.4	200 NB, with Internal Epoxy coating, Sch. Std, BE, ERW	M	84		-
A.1.5	150 NB, with Internal Epoxy coating, Sch. Sch. Std, BE, ERW	M	12		-
A.2.	**Supply of Stainless Steel Pipe, DIM. ASME B36.19M, ASTM A312 Gr.TP 304**				
A.2.1	100 NB, Sch. 40S, BE	M	120		-
A.2.2	50 NB, Sch. 40S, BE	M	24		-
A.2.3	25 NB, Sch. 40S, BE	M	36		-
A.3	**Supply of following Weld Neck flanges - WNRF 125 AARH as per ASTM A105, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.3.1	600 NB	NOS.	8		-
A.3.2	400 NB	NOS.	8		-
A.3.2	250 NB	NOS.	10		-
A.3.3	200 NB	NOS.	5		-
A.3.4	150 NB	NOS.	7		-
A.4	**Supply of following Weld Neck flanges - WNRF 125-250 RA finish as per ASTM A182 F304, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.4.1	100 NB	NOS.	14		-
A.4.2	50 NB	NOS.	12		-
A.5	**Supply of following Socket Weld flanges - SWRF 125-250 RA finish as per ASTM A182 F304, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.5.1	25 NB	NOS.	42		-
A.5.2	20 NB	NOS.	10		-
A.6	**Supply of following Blind flanges - BLRF 125 AARH as per ASTM A105, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.6.1	600 NB	NOS.	1		-
A.6.2	250 NB	NOS.	1		-
A.6.3	200 NB	NOS.	3		-
A.7	**Supply of following Blind flanges - BLRF 125-250 RA finish as per ASTM A182 F304, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.7.1	100 NB	NOS.	2		-
A.8	**Supply of 90 Deg. Elbow, ASME B16.9, BE, Welded, ASTM A234 Gr. WPB**				
A.8.1	600 NB, with Internal Epoxy coating, Sch. Match to pipe thickness	NOS.	1		-
A.8.2	250 NB, with Internal Epoxy coating, Sch. Match to pipe thickness	NOS.	1		-
A.9	**Supply of 90 Deg. Elbow, ASME B16.9, BE, ASTM A403 Gr.WP304**				
A.9.1	150 NB, Sch. 40S	NOS.	4		-
A.9.2	100 NB, Sch. 40S	NOS.	4		-
A.9.3	50 NB, Sch. 40S	NOS.	6		-
A.10	**Supply of 45 Deg. Elbow 1.5D, B16.9, BE, Welded, ASTM A234 Gr. WPB**				
A.10.1	250 NB, with Internal Epoxy coating, Sch. Match to pipe thickness	NOS.	2		-
A.11	**Supply of 45 Deg. Elbow, ASME B16.9, BE, ASTM A403 Gr.WP304**				
A.11.1	150 NB, Sch. 40S	NOS.	2		-
A.11.2	100 NB, Sch. 40S	NOS.	4		-
A.11.3	50 NB, Sch. 40S	NOS.	4		-
A.12	**Supply of Equal tee, B16.9, BE, Welded, ASTM A234 Gr. WPB**				
A.12.1	250 NB, with Internal Epoxy coating, Sch. 30	NOS.	2		-
A.13	**Supply of Equal tee, ASME B16.9, BE, ASTM A403 Gr.WP304**				
A.13.1	100 NB, Sch to match pipe thickness	NO.	3		-
A.14	**Supply of Reducing tee, B16.9, BE, Welded, ASTM A234 Gr. WPB**				
A.14.1	200 NB X 150 NB	NOS.	2		-
A.15	**Supply of Gate Valves RF , ASME B16.5, Bltd Bonnet, Hand wheel Operator, 125AARH OS & Y, Graphite Gland Packing, Rising stem, Renewable seat ring, API 598, Solid Wedge, ASTM A216 Gr. WCB Trim 8 13% Cr stem to API 600 (13% Cr Hard faced Seat), API 602, Class 150**				
A.15.1	150 NB	NOS.	2		-
A.15.2	25 NB	NOS.	6		-
A.15.3	20 NB	NOS.	5		-
A.16	**Supply of Spring loaded valves in line with the tender specifications/ data sheet.**				
A.16.1	25 NB	NOS.	6		-
A.17	**Supply of Ball valves LP FB, RF, ASME B16.5, Single piece Fltg. Ball, Lever Operator, RPTFE Seat and Seals, 125 - 250 Ra Finish, Fire safe Per API 607, API 598, Antistatic and Blowout proof, ASTM A351 Gr. CF8M 304 SS Trim Hardfaced Seats, Dim. Std - MSS SP 72, Class 150**				
A.17.1	25 NB	NOS.	6		-
A.18	**Supply of Thermal Relief valves Supply of Pilot -operated thermal relief valves , Size -3/4" x 1" flanged type, the body shall be as per piping specifications. Kindly refer to the data sheet for detailed specifications.**	NOS.	4		-
A.19	**Supply of Gate Valves - SS (Hand wheel operated) RF, ASME B16.5, Bltd. Bonnet, Handwheel Operator, 125-250Ra Finish, OS&Y, Graphite Gland Packing, API 598, Solid Wedge, ASTM A351Gr. CF8 304 SS Trim Hardfaced Seats, API 600, Class 150**				
A.19.1	100 NB	NOS.	3		-
A.19.2	50 NB	NOS.	4		-
A.20	**Supply of Check Valves- SS Swing type, RFTBE, ASMEB16.5, Wafer Type between Flanges, AISI 410Pin Inconel X750Sprng,125 - 250 Ra Finish API 598, ASTM A351Gr. CF8304 SS Trim Hardfaced Seats, API 594, Class 150**				
A.20.1	100 NB	NOS.	1		-

SR. NO.	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (INR)	TOTAL AMOUNT (INR)
	B. FIRE-FIGHTING SERVICE				
A.21	**Supply of Fire water header and riser pipe, which is to be tapped-off from the existing fire water ring main. The MOC and painting scheme shall be in accordance to the existing system. Commonly used MOC is: IS 1239 ERW Welded, Sch. Heavy.**				
A.21.1	150 NB	M	120		-
A.22	**Supply of Cooling water rings for fire-protection. Commonly used MOC is: IS 1239 ERW Welded, Sch. Heavy along with suitable tools for bending them to**				
A.22.1	80 NB Cooling rings - Top and Bottom	M	160		-
A.23	**Supply of Medium velocity water spray nozzles Chrome-plated with half-coupling with K-factor as per design calculations**	LOT	1		-
A.24	**Supply of Revolving Head, Gun metal construction with CS Pipe drilled with ANSI B 16.5 flange to be mounted on the roof of tank with the designed K-factor and flow rate.**				
A.24.1	80 NB	SET	1		-
A.25	**Supply of Foam water header pipe to be connected to the Foam pourer mounted on the tank shell . Commonly used MOC is: IS 1239 ERW Welded, Sch. Heavy.**				
A.25.1	150 NB	M	220		-
A.26	**Supply of Gate Valves RF, ASME B16.5, Bltd. Bonnet, Handwheel Operator, 125-250Ra Finish, OS&Y, Graphite Gland Packing, API 598, Solid Wedge, Rising stem, Renewable seat ring with Valve locking arrangement, ASTM A216 Gr. WCB, API 600, Class 150**				
A.26.1	150 NB	NOS.	3		-
A.27	**Supply of following Slip on flanges - SORF 125 AARH as per ASTM A105, DIM. ASME B16.5, Class 150. The scope also includes supply of spiral wound gaskets and stud bolts of suitable class.**				
A.27.1	150 NB	NOS.	8		-
A.28	**Supply of UL listed inline balance foam proportioner to control the accurate flow of foam concentrate into the water stream. MOC: Bronze or Stainless steel. The working pressure and flow rate shall be as per the requirement.**				
A.28.1	100 NB	UNIT	1		-
A.29	**Supply of Isolation gate valves for proportioner, MOC: Carbon Steel, Body- ASTM A126 Gr. WCB, API 602, Size-4"**	NOS.	2		-
A.30	**Supply of Double Headed Fire Hydrant Stand Post Assembly made from CS Tubes & Pipes, Elbows with Flanged ends having inlet size as per 100mm Barrel size x 80mm Arms withour pumper connection along with supply of GUN METALSingle Outlet Fire Hydrant Valve, having 63 mm female Oblique type, as per IS:5290.**	NOS.	1		-
TOTAL SUPPLY OF MATERIAL - PIPING WORKS					**-**
FABRICATION, ERECTION/ INSTALLATION, TESTING & COMMISSIONING OF PIPING WORKS					
	B. FABRICATION, ERECTION/ INSTALLATION OF PIPING MATERIALS				
	A. SERVICE - ATF				
B.1	Handling, Laying and Installation of above ground Carbon Steel make - API 5L Grade B pipelines for ATF service as per the directions of Engineer-in-charge on pedestals/sleepers/overhead pipe rack/structures etc.				
B.1.1	600 NB, with Internal Epoxy coating, Sch. Std, BE, ERW	M	48		-
B.1.2	400 NB, with Internal Epoxy coating, Sch. 30 BE, ERW, Thickness 6.35 mm	M	18		-
B.1.3	250 NB, with Internal Epoxy coating, Sch. 30 BE, ERW, Thickness 6.35 mm	M	42		-
B.1.4	200 NB, with Internal Epoxy coating, Sch. 30 BE, ERW, Thickness 6.35 mm	M	84		-
B.1.5	150 NB, with Internal Epoxy coating, Sch. 30 BE, ERW, Thickness 6.35 mm	M	12		-
B.2	Handling, Laying and Installation of above ground Stainless Steel make - ASTM A312 Gr.TP 304 pipelines for ATF service as per the directions of Engineer-in-charge on pedestals/sleepers/overhead pipe rack/structures etc.				
B.2.1	100 NB, Sch. 40S, BE	M	120		-
B.2.2	50 NB, Sch. 40S, BE	M	24		-
B.2.3	25 NB, Sch. 40S, BE	M	36		-
B.3	Radiography inspection on product pipe joints of all types including providing all necessary testing equipment required to perform the work as per detailed specification and instruction from the site engineer.	LS	1		-
B.4	Dye penetration examination for the welded pipes including providing all equipment & materials necessary for the job & labour etc. as directed by the site in-charge	LS	1		-
B.5	Welding of the supplied CS WNRF flanges of the following sizes on the including setting, positioning, setting, welding, all leads & lifts etc., complete as per specifications and instructions at site.				
B.5.1	600 NB	NOS.	8		-
B.5.2	400 NB	NOS.	8		-
B.5.3	250 NB	NOS.	10		-
B.5.4	200 NB	NOS.	5		-
B.5.5	150 NB	NOS.	7		-
B.6	Welding of the supplied SS WNRF flanges of the following sizes on the including setting, positioning, setting, all leads & lifts etc., complete as per specifications and instructions at site.				
B.6.1	100 NB	NOS.	14		-
B.6.2	50 NB	NOS.	12		-
B.7	Making flanged joints for both slip on and blind flanges including supplying and fixing 3 mm thick SW SS gaskets with graphite filler, studs / nuts etc. of approved make for the following sizes as per Piping specifications and site instructions. The rate quoted for the above items also include mechanical cleaning of the face. The flange joint shall also includes providing and fixing multi strand copper strip/flat for bonding of product pipeline including provision of lugs.				
B.7.1	600 NB	NOS.	1		-
B.7.2	250 NB	NOS.	1		-
B.7.3	200 NB	NOS.	3		-
B.7.4	100 NB	NOS.	2		-
B.8	Handling, Fixing the supplied Hand Wheel /Lever/Gear Operated Gate Valves /ROSOV/DBBV/MOV of following sizes on the product pipelines including supplying and fixing 3mm thk CAF gaskets , studs/ nuts etc of approved make for the following sizes as per specifications				
B.8.1	Handling & Fixing of ROSOVs				
B.8.1.1	600 NB	NOS.	1		-
B.8.1.2	400 NB	NOS.	1		-
B.8.1.3	250 NB	NOS.	1		-
B.8.2	Handling & Fixing of Motor operated valves				
B.8.2.1	600 NB	NOS.	1		-
B.8.2.2	400 NB	NOS.	1		-
B.8.2.3	250 NB	NOS.	1		-
B.8.3	Handling & fixing of Hand operated gate valves				
B.8.3.1	250 NB	NOS.	1		-
B.8.3.2	150 NB	NOS.	2		-
B.8.3.3	100 NB	NOS.	3		-
B.8.3.4	50 NB	NOS.	4		-
B.8.3.5	25 NB	NOS.	6		-
B.8.3.6	20 NB	NOS.	5		-
B.8.4	Handling & Fixing of the supplied check valves				
B.8.5.1	600 NB	NOS.	1		-
B.8.5.2	400 NB	NOS.	1		-
B.8.5.3	250 NB	NOS.	1		-

SR. NO.	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (INR)	TOTAL AMOUNT (INR)
B.9	Handling & Fixing of the supplied spring loaded valves, Size-1"	NOS.	6		-
B.10	Handling & Fixing of the supplied ball valves, Size-1"	NOS.	6		-
B.11	Handling & Fixing of the supplied Thermal relief valves	NOS.	3		-
B.12	Handling & Fixing of Tied Double metal Bellows Expansion Joint as per the tender specifications & data sheet				
B.12.1	600 NB	NOS.	1		-
B.12.2	400 NB	NOS.	1		-
B.12.3	250 NB	NOS.	1		-
B.13	External surface Painting of Pipelines Supplying and Application of primer coat and finish coats (2 coats) on the external surface area of the product pipes as per the tender specifications Rate to include the Blasting of external surfaces of Pipe by using MS Grit and surface finish shall be SA 2.5	Sq.M	1,465		-
B.14	Hydrotesting of all product pipelines as per the directions of Engineer-in-charge (EIC). The supply of water shall be in the scope of Contractor/ Bidder.	LS	1		-
B.15	Tie-in with existing headers in dyke wall including removal of ATF as per directive of EIC. The scope of work shall include supply of gaskets, stud bolts, etc. complete in all respect.	LS	1		-
	B. FIRE-FIGHTING SERVICE				
B.17	Handling, Installation, Testing of Fire water header and riser pipe , which is to be tapped -off from the existing fire water ring main. The MOC and painting scheme shall be in accordance to the existing system . Commonly used MOC is : IS 1239 ERW Welded, Sch. Heavy.				
B.17.1	150 NB	M	120		-
B.18	Tie-in with the existing hydrant and foam headers and supply of all the necessary flanges, gaskets, etc.				
B.19	Erection & Installation of Cooling water rings for fire -protection. Commonly used MOC is : IS 1239 ERW Welded, Sch. Heavy along with suitable tools for bending them to				
B.19.1	80 NB Cooling rings - Top and Bottom	M	160		-
B.20	Installation & Testing of Medium velocity water spray nozzles Chrome-plated with half-coupling with K-factor as per design calculations.	LOT	1		-
B.21	Installation of Revolving Head, Gun metal construction with CS Pipe drilled with ANSI B16.5 flange to be mounted on the roof of tank with the designed K-factor and flow rate.				
B.21.1	80 NB	SET	1		-
B.22	External surface painting of Fire water and Foam headers and riser pipes including the cooling water rings. The painting scheme shall be in line with the exisiting scheme being followed for the tanks	SQ.M	200		-
B.23	Handling, Installation, Testing of Foam water header pipe to be connected to the Foam pourer mounted on the tank shell . Commonly used MOC is: IS 1239 ERW Welded, Sch. Heavy.				
B.23.1	150 NB	M	220		-
B.24	Fixing the supplied Hand Wheel /Lever/Gear Operated Gate Valves / monitors/ hydrants of following sizes on the fire water and foam pipelines including supplying and fixing 3mm thk CAF gaskets , studs/ nuts etc of approved make for the following sizes as per specifications.				
B.24.1	Fixing of hand operated gate valves				
B.24.1.1	150 NB	NOS.	3		-
B.24.1.2	100 NB	NOS.	2		-
B.25	Welding of the supplied CS SORF flanges of the following sizes on the including setting, positioning, setting, welding, all leads & lifts etc., complete as per specifications and instructions at site.				
B.25.1	150 NB	NOS.	8		-
B.26	Installation of UL listed inline balance foam proportioner on the foam header pipelines				
B.26.1	100 NB	UNIT	1		-
B.27	Installation of Double Headed Fire Hydrant Stand Post Assembly	NOS.	1		-
B.28	Relocation existing water cum Foam Monitor with Fire Ring Main Header & Foam Water Header (approx. 45 m length each) with Supply Installation Testing and commisioning of isolation valve, Tap off with existing header including shut down of existing header as per directive of Engineer Incharge including removal of existing water cum foam monitor along with Main Header Fire water, Foam Header and installation of the same as per directive of Engineer Incharge.	Nos.	1		-
TOTAL FABRICATION, ERECTION/ INSTALLATION, TESTING & COMMISSIONING OF PIPING WORKS					**-**
GRAND TOTAL PIPING WORKS (SUPPLY + ERECTION, INSTALLATION, TESTING & COMMISSIONING)					**-**

Abbreviations: MT - Metric Tonnes; Sq.M - Square Meter; LS: Lumpsum

NOTES

1 The pedestals/ sleepers/supports for pipelines have been considered in the Civil Works Bill of Quantity. The necessary cleats, U-clamps, etc. have been considered in the Civil BOQ.

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

SCHEDULE OF PRICES

The Bidder shall quote for the entire Works, such that the total Tender (lump sum) price *inter-alia* covers break ups of the price of all cost centres and applicable taxes thereon, if any, along with all its risks, obligations and liabilities set out in or to be reasonably inferred from the Tender Documents in respect of the procurement, supply, construction, erection, installation, setting to work, testing, pre commissioning, successful commissioning and completion of the Works, all in accordance with the requirements of the tender and applicable laws.

In the Schedule of Prices, the bidder shall quote all prices showing all taxes, duties, levies, and charges separately.

The Works shall be executed by the Contractor for a total Tender (lump sum) price as provided basis the Schedule of Prices.

The Bill of Quantities shall only serve the limited purpose of deriving the basis on which the lump sum price has been arrived.

The prices quoted by the bidder shall not be subject to adjustment during the term of the Contract.

PREMABLE

1. The Schedule of Prices includes the following:
   (i) the Tender total comprising an aggregate of the following:
      a) **Section A -** Supply
      b) **Section B** – Execution

It is clarified that the Tender total, once formalized, will be a lump sum price inclusive of taxes. Conversely, the aggregate of the lump sum prices of Section A and Section B shall constitute the Tender Total.

   (ii) Bill of Quantities for the entire Works is for the limited purpose of understanding how the lump sum price has been derived. Bill of quantities (*as attached*) is tentative and only for guidance purposes.

2. Price Adjustment
   All prices are firm and fixed for the duration of the Contract and are not subject to escalation for any cause, except as otherwise provided in the Contract. Payment of the Tender Total (lump sum price) comprising Sections A and Section B as per above Schedule of Prices, shall constitute full payment for performance of the Works and covers all costs of whatever nature incurred by the Contractor in accomplishing the Works in accordance with the provisions of the Contract.
   The Contractor shall maintain all Works in progress until it is accepted. Contractor shall repair, rework or replace as necessary any work damaged or lost due to normal wear and tear, anticipated events, or conditions within its control. No separate payment shall be made for such maintenance costs which are deemed included in the original Contract Sum. Any failure to maintain the Works shall be considered a defect in accordance with the Conditions of tender.

B. THE TENDER TOTAL

The Tender Total comprises:

The Fixed Lump Sum of this Contract is: Section A + Section B, where

Section	Description	Amount in Rs	Taxes in Rs	Total Amount in Figures
A	SUPPLY	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**
B	ERECTION	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**
C	TOTAL	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**	**NOT TO BE FILLED HERE**

NOTE: Prices are only be filled in "Price Bid" of tender. Above is only for illustration purpose.

THE BIDDERS ARE REQUIRED TO NOTE THAT THE CONTRACT SHALL BE AWARDED AND THE WORKS SHALL BE EXECUTED ON A LUMP SUM PRICE BASIS AND NOT ON UNIT RATE BASIS AND THE UNIT RATES (TO BE SUBMITTED BY THE SUCCESSFUL BIDDER) IN THE BILL OF QUANTITIES WHICH HAVE BEEN TABULATED ONLY FOR THE PURPOSE OF PROVIDING THE BASIS OF DERIVING THE LUMP SUM PRICE. BIDDERS MUST NOTE THAT THE BILL OF QUANITITIES IS SOLELY FOR GUIDANCE PURPOSES.

The successful bidder shall also give a breakdown and details of such prices vis-à-vis each of the cost centre/items as itemized in the Bill of Quantity/Schedule of Prices. A fully filled Indicative Bill of Quantities to arrive at the total lump-sump cost shall be submitted by successful bidder prior to award of contract.

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE I – DEVIATION SHEET

EXCEPTION AND DEVIATIONS STATEMENT				
S.NO.	PAGE NO. OF TENDER DOCUMENT	CLAUSE NO.	SUBJECT	DEVIATIONS

Bidder shall list all the deviations in the following given format only on their Letterhead. The Deviation sheet should be submitted along with technical bid.

In case no deviation sheet is submitted along with technical bid, it would be concluded that bidder has accepted all specifications, terms and conditions.

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE II – DECLARATION SHEET

Date:

DECLARATION

We, M/s hereby, unconditionally accept all terms & conditions of TENDER NO.: DAFFPL/FF/2022-23/05 (JOB: TENDER FOR ENGINEERING PROCUREMENT CONSTRUCTION OF NEW 9000KL AG TANK) including Scope of job, quantities, completion period, terms & condition without any deviations.

Sign & Stamp of Bidder

Note: In case of deviations (whether technical or commercial) the above declaration should not be submitted, and the deviations should be mentioned separately on bidders letter head with the heading "DEVIATION SHEET". In absence of "DEVIATION SHEET", it would be concluded that bidder has submitted his offer as per tender specifications, terms & conditions. Corrections in tender booklet will not be accepted.

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE-III

PROFORMA OF BANK GUARANTEE
(EARNEST MONEY DEPOSIT)
(On Non-Judicial Stamp paper for appropriate value)

BANK GUARANTEE NO. :
BANK GUARANTEE AMOUNT:
CLAIM:
(Till 120 days from date of submission of Proposal)
TENDER NO. /DATE:
JOB DESCRIPTION/
LOCATION:

Tender Security No. [*]

Name and Address of the Beneficiary: Delhi Aviation Fuel Facility (Private) Limited
Aviation Fuelling Station, Shahabad Mohammadpur, IGI Airport, New Delhi – 110 061, India

We [*name and address of the issuing bank*] have been informed that [*Name of the Interested party*] (hereinafter called the "Interested Party") is submitting a proposal for the Award of the Works in response to a Request for Proposal ("RFP") by Delhi Aviation Fuel Facility (P.) Ltd. ("DAFFPL" or 'Beneficiary") for [*Insert description of work*] ("Works"). The conditions of the RFP, which are set out in a documents entitled Request for Proposal dated [*Please insert*] require its offer to be supported by a Tender Security.

At the request of the Interested Party, we hereby irrevocably undertake to pay you without demur, the Beneficiary, any sum or sums not exceeding Rs. _____ [*Please insert*].

Upon receipt by us of your demand in writing and your written statement (in the demand) stating that:

1) The Interested Party has, without written consent of DAFFPL, withdrawn its offer after the latest time specified for its submission and before the expiry of its period of validity; or
2) The Interested Party has refused to accept the correction of errors in nits offer in accordance with the instructions to Interested parties contained in the RFP; or

_____
Sign & Stamp of Bidder

3) DAFFPL entered in to the contract with the Interested party but the Interested party has failed to deliver the **COMPOSITE BANK GUARANTEE (SECURITY DEPOSIT & PERFORMANCE**) in compliance with the Contract conditions; or

4) The Interested Party has failed to enter into the Contract within 30 (Thirty) days of being required to do so by the Tender Officer.

Any demand for payment must contain your signature(s). The demand must be received by us at this office on or before the expiry of the earliest of the following dates, when this security guarantee shall expire and shall be returned to us:

a) Date of issue of letter communicating to the Interested Party that it has not qualified for the contract or the Proposal submitted by the Interested Party is unsuccessful or the TENDER is withdrawn and/or cancelled by the Beneficiary; or

b) 7 (seven) days after the date of delivery of an acceptable performance bond complying with the Contract conditions and execution of the Contract after the award of the works to the Interested Party; or

c) 120 (One hundred twenty) days from the last date of submission of Proposal in accordance with the TENDER.

Date:

Signature:

Designation:

Name of the Branch

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE-IV

PROFORMA OF COMPOSITE BANK GUARANTEE (SECURITY DEPOSIT & PERFORMANCE)

(On Non-Judicial paper of Rs. 100/-value)

To,

DAFFPL

Dear Sirs,

M/s ……..have taken tender for the work ……for DAFFPL,.

The tender Conditions of Contract provide that the Contractor shall pay a sum of Rs. …….. (Rupees ……..) as security deposit & performance guarantee in the form therein mentioned. The form of payment of security deposit & performance guarantee includes guarantee executed by Scheduled Bank at New Delhi, undertaking full responsibility to indemnify DAFFPL, in case of default. The said party …….. have approached us at and their request and in consideration of the premises we …….. having our office at …….. have agreed to give such guarantees as hereinafter mentioned.

1. We ----------hereby undertake and agree with you that if default shall be made by M/s. ----------in performing any of the terms and conditions of the tender or in payment of any money payable to Daffpl. We shall on demand pay to you, without demur, protest or requiring you to seek recourse to M/s _____, in such matter as to you may direct the said amount of Rupees ---------- ----only or such portion thereof not exceeding the said sum as you may from time to time require.
2. You will have the full liberty without reference to us and without effecting this guarantee, postpones for any time or from time to time the exercise of any of the powers and rights conferred on you under the contract with the said ---------- ----------and to enforce or to forbear from endorsing any powers of rights or by reason of time being given to the said ----------which under law relating to the sureties would but for provision have the effect of releasing us.
3. Your right to recover the said sum of Rs. ---------- (Rupees ----------) from us in manner aforesaid will not be affected or suspended by reason of the fact that any dispute or disputes have been raised by the said M/s. ----------

_____
Sign & Stamp of Bidder

--------and/or that any dispute or disputes are pending before any officer, tribunal or court.

4. The guarantee herein contained shall not be determined or affected by the liquidation or winding up dissolution or change of constitution or insolvency of the said ----------but shall in all respect and for all purposes be binding operative units payment of all money due to you in respect of such liabilities is paid.
5. Our liability under this guarantee is restricted to Rupees ----------our guarantee shall remain in force until ----------unless a suit or action to enforce a claim under Guarantee is filed against us within six months from ----------(which is date of expiry of guarantee) all our rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.
6. NOT WITHSTANDING anything hereinbefore contained our liability under this Bank Guarantee is restricted to Rupees ----------(Rupees ----------).This Bank Guarantee shall be valid up to ----------and we are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if you serve upon us a written claim or demand on or before ----------.
7. This guarantee is to be returned to us within fifteen (15) days from the date it ceases to be in force. If the guarantee is not returned to us within the date of aforementioned it shall be automatically cancelled.
8. We have power to issue this guarantee in your favour under Memorandum and Articles of Association and the undersigned has full power to do under the Power of Attorney dated ----------granted to him by the Bank.

Yours faithfully

----------Bank
By its Constituted Attorney
Signature of a person duly
Authorized to sign on behalf of the bank

_____
Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Annexure- V

Form of Letter of Undertaking

[On the letterhead of the Interested Party]

Letter of Undertaking

Date:

Delhi Aviation Fuel Facility (Private) Limited
Aviation Fuelling Station, Shahabad Mohammadpur,
IGI Airport, New Delhi – 110 061, India

Re:

The undersigned Interested Party acknowledges that the TENDER issued is confidential and personal to the undersigned Interested Party and hereby undertakes and agrees as follows:

1. "**Confidential Information**" means the TENDER and everything contained therein, all documentation, data, particulars of the Works and technical or commercial information made by (or on behalf of) Delhi Aviation Fuel Facility (Private) Limited or obtained directly or indirectly from Delhi Aviation Fuel Facility (Private) Limited or its representatives by the undersigned Interested Party or which is generated by the undersigned Interested Party or any information or data that the undersigned Interested Party receives or has access to, as a result of the TENDER, as being confidential information of Delhi Aviation Fuel Facility (Private) Limited, provided that such term does not include information that (a) was publicly known or otherwise known to undersigned Interested Party prior to the time of such disclosure, (b) subsequently becomes publicly known through no act or omission by undersigned Interested Party or any person acting on its behalf.

2. The undersigned Interested Party shall maintain the confidentiality of Confidential Information in accordance with procedures adopted by the undersigned Interested Party in good faith to protect confidential information of third parties delivered to it, provided that the undersigned Interested Party may deliver or disclose Confidential Information to its authorized representatives who agree to hold confidential the Confidential Information substantially in accordance with the terms of this Undertaking.

3. The undersigned Interested Party shall not at any time whatsoever:

   (i) Disclose, in whole or in part, any Confidential Information received directly or indirectly from the Delhi Aviation Fuel Facility (P) Limited to any third party.

_____
Sign & Stamp of Bidder

(ii) Reproduce, publish, transmit, translate, modify, compile or otherwise transfer the Confidential Information.

4. In case the Proposal of the undersigned Interested Party is not accepted and immediately upon the acceptance of the Proposal of any of the other Interested Party, the undersigned Interested Party, shall:

(i) Return all Confidential Information including without limitation, all originals, copies, reproductions and summaries of Confidential Information; and

(ii) Destroy all copies of Confidential Information in its possession, power or control, which are present on magnetic media, optical disk or other storage device, in a manner that ensures that the Confidential Information is rendered unrecoverable.

5. The undersigned Interested Party shall certify to Delhi Aviation Fuel Facility (Private) Limited that it has returned or destroyed such Confidential Information to the Delhi Aviation Fuel (Private) Limited within two (2) days of such a request being made by Delhi Aviation Fuel (Private) Limited.

Name of Interested Party's

Signature of Authorized Representative

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Annexure VI

DECLARATION to be submitted along with Technical Bid

(M/s.) hereby declare / clarify that we have not been banned or delisted by IOCL/BPCL/DIAL or any government or quasi Government agencies or Public Sector Undertakings.

Stamp & Signature of the bidder

NOTE: If a bidder has been banned by IOCL/BPCL/DIAL or any Government or quasi Government agencies or PSUs, this fact must be clearly stated with details. If this declaration is not given along with the technical bid, the tender will be rejected as non-responsive.

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

ANNEXURE VII

STATEMENT OF CREDENTIALS

(A)

1. NAME AND CORRESPONDENCE ADDRESS OF THE TENDERER

_____

_____

_____

PERMANENT ADDRESS OF THE TENDERER

_____

_____

_____

2. TELEPHONE NO. _____

MOBILE NO. _____

3. NAME OF CONTACT PERSON(s): _____

4. NAME OF THE AUTHORISED SIGNATORY: _____

5. E Mail ID: _____

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

(B) **TYPE OF BUSINESS ENTITY:**

1. YEAR OF ESTABLISHMENT OF THE FIRM: _____

2. SOLE PROPRIETORSHIP: - _____

(Give Name of the Proprietor)

OR

3. PARTNERSHIP FIRM?

(Give names of the Partners and enclose scan copy of Partnership deed)

1. _____

2. _____

3. _____

4. _____

OR

4. PRIVATE OR PUBLIC LIMITED COMPANY?

(Attach list of Directors and copy of Certificate of Incorporation as defined in "Other Mandatory Documents")

(C) **Details of Completed Purchase Orders of minimum value as per Pre-qualification criteria (PQC/BQC) during last SEVEN years as specified in PQC/BQC of the tender.**

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Sl. No	Particulars	1	2	3
a	Party's Name to whom supplied, Clear Postal Address, Telephone/Fax Nos and E-Mail Address.			
b	**Purchase Order Details-**			
	PO Reference No.			
	PO Date			
	PO Value (Rs. in Lakhs)			
c	**Quantity & place of supply**			
d	**Scheduled time of completion as per PO**			
e	**Date of commencement of supply**			
f	**Date of completion of supply**			
g	**Completion certificate reference and date**			

Note: a. Tenderer should furnish copy of the above-referred orders (as defined under PQC documents) and

b. Enclose a separate statement if space is not sufficient.

(D) **Annual Turnover (as per Audited Balance Sheet) in following last THREE financial years**

SL No.	Financial Year	Value (Rs. In Lakhs)
1	2019-2020	
2	2020-2021	
3	2021-2022	

_____

Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Note : Tenderer should furnish copy of audited accounts as proof of turnover (as defined under tender documents)**.**

(E) **INCOME TAX DETAILS:**

i. Income Tax Returns Filed:

ASSESSMENT YEAR	DATE	ACKNOWLEDGEMENT NO
2019-2020		
2020-2021		
2021-2022		

Note: Tenderer should furnish copy of the Income Tax Return filed.

ii. Income Tax Assessment Orders for following three financial years:

ASSESSMENT YEAR	ASSESSMENT ORDER & DATE	REMARKS
2019-2020		
2020-2021		
2021-2022		

Copies of Income Tax assessment orders / return filed / acknowledgement order for the three years as indicated above.

(F) GST Registration Details:

GST Registration no	

Note: Tenderer should furnish copies of above Tax Registration Certificates.

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Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

(G) **Mode of EMD (Online EMD or BG):**

i. If paid Online:

AMOUNT	Rs.
(RTGS/NEFT/NET BANKING)	
Transaction Detail	

ii. If Bank Guarantee submitted (following details to be given) :

Name of the Issuing Bank and Branch Address	Bank Guarantee No and Date	BG Amount Rs.	Date of issuance	Valid Upto

(H) **Production Capacity Details: (in case of manufacturer)**

S. N	Item	Factory/ Location	Installed/ Capacity	Already Committed Capacity (For current Purchase orders in hand)	Spare Capacity, If Any	Capacity Committed to DAFFPL against this tender
			A	B	C=A-B	

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Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

Factory License and Address Details:

_____

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(J) **In case the bidder is not a manufacturer, the bidder should submit an undertaking on Letter Head that the bidder is capable of supplying the material / equipment as per tender requirement.**

(K) **Pan Card Details**

Relation of Pan Holder to Tenderer
(PROP./PARTNER/COMPANY ETC.)
(Tenderer is required to upload copy of PAN card as detailed in "Other Mandatory documents")

(L) **Details of Documents uploaded along with Tender documents in technical bid and confirmation required to be furnished by tenderer.**

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Sign & Stamp of Bidder

DELHI AVIATION FUEL FACILITY PRIVATE LIMITED

PAYMENT TO VENDORS THROUGH ELECTRONIC MODE

Tenderers are requested to submit their Consent Letter as per the format given below along with the enclosures as required:

Dated:

To,
M/s DAFFPL.

Dear Sir,
With reference to your advice, we hereby agree to accept the payment of our bills through "RTGS/NEFT/Electronic Mode". The desired bank account details are given below:

1.	Name of Beneficiary	
2.	Name of the Beneficiary's Bank	
3.	Address of the Beneficiary's Bank Branch	
4.	Contact details of Branch with STD Code	
5.	Beneficiary's Bank Account No. (as per cheque copy)	
6.	Beneficiary's Account Type (SB/CC/CA)	
7.	Beneficiary's Bank IFSC Code (11 Digit)	
8.	Mobile No of Beneficiary (One Number only)	
9.	E-Mail Id of Beneficiary (One Mail Id only)	

A blank cancelled cheque leaf relating to the above bank account is enclosed for verifying the accuracy of the bank account details.
I hereby declare that the particulars given above are correct and complete.

(Signature of Account Holder)
Seal of the Vendor

Encl: Cancelled Cheque

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Sign & Stamp of Bidder