



Tender Notice No: PRYJ-W-EN-O&M RBMV-2025-01

**Request for Proposal (RFP)
(Single stage Two Packet System)
for**

Operation & Maintenance of DFCCIL's 8 Nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.

Issued on: April-2025

(Participation through e-Tender only)

Visit: www.ireps.gov.in

(Help desk of IREPS: 011-23761525)

Client:

DEDICATED FREIGHT CORRIDOR CORPORATION OF INDIA LIMITED

(A Government of India Enterprise)

Under

Ministry of Railway

INDEX

CHAPTERS	DESCRIPTION	PAGE NO.
Chapter I	Instructions to bidders for Online bidding	3 to 7
Chapter II	Notice Inviting E-Tender	8 to 11
Chapter III	Schedule of Requirements (SOR)	12 to 15
Chapter IV	Preamble and General Instructions to Tenderers (ITT)	16 to 40
Chapter V	General Conditions of Contract (GCC)	41 to 68
Chapter VI	Special Conditions of Contract (SCC)	69 to 82
Chapter VII	Tender Forms 1 to 28 and Annexure I to X	83 to 145

INSTRUCTIONS TO BIDDERS FOR ONLINE BIDDING

Chapter- I

Instructions to bidders for online bidding

General: - Submission of Online Bids is mandatory for this Notice Inviting Tender. For conducting electronic tendering, DFCCIL has decided to use the portal E-tendering site- <https://www.ireps.gov.in> / its link at www.dfccil.com (Help desk of IREPS: 011 - 23761525). The tenderer/bidders must have Class-III Digital Signature Certificate & must be registered on IREPS portal. Only registered tenderer/bidders can participate on e-Tendering. All relevant documents must be uploaded at the time of participating in e-Tendering. **Instructions:** -

1. Online Bidding Methodology:

Online Bid System

2. Broad outline of activities from Bidders perspective: -

- a. Procure a Digital Signing Certificate (DSC)
- b. Register on Electronic Tendering System (ETS)
- c. Create Users and assign roles on ETS
- d. View Notice Inviting Tender (NIT) on (ETS)
- e. Download Official copy of Tender Documents from ETS.
- f. Clarification to Tender Documents on ETS - Query to DFCCIL (Optional) - view response to queries posted by DFCCIL through addenda.
- g. Bid Submission on ETS: Prepare & arrange all documents/paper for submission of bid online and tender fees deposit through E-Payment gateway.
- h. Attend Public Online Tender Opening Event (TOE) on ETS.
- i. Post TOE clarification on ETS (Optional). Respond to DFCCIL's post - TOE queries.

For participating in this tender online, the following instructions are to be read carefully. These instructions are supplemented with more detailed guidelines on the relevant screens of the ETS.

Note

- a) It is advised that all the documents to be submitted are kept scanned and converted to PDF format in a separate folder on your computer before starting online submission.
- b) While uploading the documents it should be ensured that the file name should be the name of the document itself.

3. Digital Certificate:

For integrity of data and its authenticity/ nonrepudiation of electronic records and to be compliant with IT Act 2000, it is necessary for each user to have a Digital Certificate (DC) also referred to as Digital Signature Certificate (DSC) of class III issued by a Certifying Authority (CA) licensed by Controller of Certifying Authority (CCA) (refer <http://www.cca.gov.in>).

4. Registration:

The Tender documents can be downloaded from the website: <https://www.ireps.gov.in> and to be submitted in the e - format. The cost of the Tender Documents and BID SECURITY have to be submitted only through online payment modes available on IREPS portal like net banking, debit card, credit card etc. Manual payments through Demand draft, Banker's cheque, Deposit receipts, FDR etc. are not allowed. Payments against this tender towards tender document cost and earnest money are to be deposited /submitted before the schedule date & time of submission of the tender otherwise the Bid will not be considered. Amendments, if any, to the tender document will be notified in the above website as and when such amendments are notified. It is the responsibility of the bidders who have downloaded the tender documents from the website to keep themselves abreast of such amendments before submitting the tender documents.

Intending bidders are requested to register themselves on IREPS portal through <https://www.ireps.gov.in> for obtaining User ID and Password by paying Vendor registration fee and processing fee for participating in the above-mentioned tender. 'Vender Manual' containing the detailed guidelines for E-Tendering is available on www.ireps.gov.in

5. DFCCIL, has decided to use the process of E- Tendering for inviting this tender and thus the physical copy of the tender documents would not be sold/ accepted.

- i) Amendments, if any, to the tender document will be notified in the above website as and when such amendments are to be notified. It is the responsibility of the Tenderer who has downloaded the tender documents from the website to keep themselves abreast of such amendments and attach all the addendum/addenda/corrigendum/corrigenda (if any) duly signed along with the submission of the tender documents.
- ii) To participate in the E-bid submission, it is mandatory for the Bidders to get themselves registered with the IREPS (www.ireps.gov.in) and to have User ID and Password.

6. List of Contact persons for this tender & Bank Account Details of DFCCIL: -

DFCCIL Contact- 1	Sh. Akhilesh Kumar Dy. CPM/Engg/PRYJ-W
Telephone/Mobile No.	7897587778
E-mail ID	akhileshkumar@dfcc.co.in
DFCCIL Contact- 2	Sh. Rajiv Srivastav Dy. PM/Engg/PRYJ-W
Telephone/Mobile No.	7897999802
E-mail ID	rsrivastav@dfcc.co.in
Name	DFCCIL NEW DELHI
Bank account number	302701010652598
IFSC code	UBIN0546836
Bank Name	Union Bank of India
Bank Branch	Moti Bagh Branch, New Delhi

7.0 DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATION AS PER BID: -

The bidder shall furnish, as part of his bid document establishing the bidders' eligibility. All these documents should be numbered and should be signed by bidder in each page.

- 7.1 Tender fee has to be deposited through e-payment only. The tender processing fees as per applicable rate payable through the e- payment gateways to IREPS portal is Nonrefundable. Payments against this tender towards tender document cost and earnest money are to be done before the schedule date & time of submission of the tender otherwise the Bid will not be considered.
- 7.2 Tender documents (s) in original, duly filled in, should be signed by the bidder or his Authorize representative along with seal on each page. All corrections and overwriting must be initialized with date by the bidder or his authorized representative.
- 7.3 *Copy of PAN card.*
- 7.4 *The authenticated copy of registered partnership deed and registration of the firm from registrar of firm in case of partnership firm.*
- 7.5 *In case of proprietorship firm bidder will submit an affidavit, attested by Notary Public that "I am a sole proprietor of the firm _____" in case of _____ Proprietorship firm on Non judicial stamp paper of Rs 500/-.*
- 7.6 *Bidder's profile duly filled in, as per tender document.*
- 7.7 *Power of Attorney for signing the Application. If applicable, the Power of Attorney for Lead Member of JV.*
- 7.8 *Article of association and memorandum in case of private/public limited company.*
- 7.9 *Copy of E.P.F. registration. (optional)*
- 7.10 *Copy of ESI Certificate. (optional)*
- 7.11 *Copy of GST registration no.*
- 7.12 *Memorandum of Understanding (in case of JV)*

Note- (i) Any discrepancy found in the downloaded tender document submitted by the bidder compared to uploaded tender document, the tender document uploaded by the DFCCIL will be treated as valid and any changes (found in the tender document submitted by the bidder) at any stage, will be treated as fraud done to the DFCCIL, and will be liable to cancellation of agreement done (if any) & appropriate action will be taken against the bidder.

(ii) While submitting the Tender 'Online' the Tenderer shall read the terms & conditions and accept the same in order to proceed further to submit their Tender.

8.0 The following 'FOUR KEY INSTRUCTIONS for BIDDERS' must be assiduously adhered to:

1. Obtain individual Digital Signing Certificate (DSC or DC) well in advance of your first tender submission deadline on ETS.
2. Register your organization on ETS well in advance of your first tender submission deadline on ETS.
3. Get your organization's concerned executives trained on ETS using an online training module well in advance of your tender submission deadline on ETS.
4. Submit your bids well in advance of tender submission deadline on ETS (DFCCIL should not be responsible for any problem arising out of internet connectivity issues).

9.0 Modification / Withdrawal of bids:

- (i) Bidder may modify/ withdraw its e- bid after submission prior to the Bid Due Date & time. No Bid shall be modified / withdrawn by the Applicant on or after the Bid Due Date & time.

- (ii) Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid Due Date, unless the same has been expressly sought for by the Authority, shall be disregarded.
- (iii) For modification of e-bid, applicant has to detach its old bid from e-tendering portal and upload / resubmit digitally signed modified bid.
- (iv) For withdrawal of bid, applicant has to click on withdrawal icon at e-tendering portal and can withdraw its e-bid.

10. Method for submission of bid documents

In this TENDER, the Tenderer has to participate in e-Tendering online. Tender Document fee in respect of e-tendering should be accepted through net banking or payment gateway only before the schedule date.

Note: The Bidder has to upload the Scanned copy of all above said documents during Online Bid submission also.

Other instructions

- a) It is recommended that the Tenderer/vendor should visit the portal (ireps.gov.in), peruse the information provided under the relevant links and login to it and upload documents of bid.
- b) DFCCIL reserves the right to cancel the tender before submission / opening of tender, postpone the tender submission / opening date and to accept / reject any or all tenders without assigning any reason thereof. DFCCIL's assessment of suitability as per eligibility criteria shall be final and binding.
- c) Information as required as per various Forms/Annexures to tender document should be submitted by the tenderers without fail strictly as per formats.

Important Note: It is strongly recommended that all authorized users of Supplier organizations should thoroughly peruse the information provided under the relevant links and take appropriate action.

11. OPENING AND EVALUATION OF BIDS:

- (i) Opening of Bids will be done through an online process.
- (ii) For participating in the tender, the authorized signatory holding Power of Attorney shall be the Digital Signatory. In case the authorized signatory holding Power of Attorney and Digital Signatory are not the same, the bid shall be considered non-responsive.

The DFCCIL Authority shall open bid documents received in electronic form at the scheduled date and time of opening of tender. The DFCCIL Authority will subsequently examine and evaluate the Bids in accordance with the provisions set out in the BID DOCUMENTS.

12. ONLINE E-BIDDING METHODOLOGY:

Online E- Bid System –All the Bids received shall be opened on the date and time mentioned above in the tender notice. Bid of the bidders shall be opened through process of e-tendering. The sequence of opening shall be:

- i) Cost of Tender Document and Bid Security Details
- ii) Technical, and
- iii) **Financial Bid (only of qualified bidders on the basis of technical bid)**

Chapter - II

NOTICE INVITING E-TENDER

CHAPTER - II**NOTICE INVITING TENDER (NIT)**

1	E-Tender No.	PRYJ-W-EN-O&M RBMV-2025-01
2	Name of Work	Operation & Maintenance of DFCCIL's 8 Nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.
3	Estimated Cost of Work	₹ 17,69,76,676.85 (inclusive 18% GST) (Rs. Seventeen Crore Sixty-Nine Lakh Seventy-Six Thousand Six Hundred and Seventy-Six Rupees and Eighty-Five Paise only.)
4	Completion Period	36 months
5	Type of BID	Open E-Tender Single Stage Two Packet System
6	Tender Fee	₹. 10,000 + 18% GST = ₹ 11,800.00/-
7	Earnest Money	₹ 10,34,900/- (Rs. Ten Lakhs Thirty-Four Thousand Nine Hundred Rupees only)
8	Last Date and Time of Downloading of Tender from website ireps.gov.in and www.dfccil.com	15:00 Hrs of [21.05.2025]
9	Date and Time of start and end submission of Tender on website ireps.gov.in	Bidding can be started from [06.05.2025] and can be submitted up to 15.00 Hrs of [21.05.2025] through www.ireps.gov.in
10	Date and Time of Opening of Tender	15:30 Hrs. of [21.05.2025]
11	Date and Time of opening of Financial Bid	Will be informed after finalization of technical bid to Technically qualified Bidders
12	Validity of offer	90 Days from the date of opening of tender.
13	Security Deposit	5% of Contract Value
14	Pre-Bid meeting & Venue	11:00 hrs of [30.04.2025] at Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2 nd floor, DFCC Operation Control Centre, Subedar Ganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India.
15	Performance Bank Guarantee	Performance Guarantee (PG) have to be submitted within 21(Twenty-one) days from the date of issue of Letter of Acceptance (LOA), amounting to 5% of the contract value in the form as given in clause 16.4 of GCC April 2022.
16	Address of communication	Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2 nd floor, DFCC Operation Control Centre, Subedar Ganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India. Website: www.dfccil.com
17	Help Desk for E-Tendering	For any clarification, help and registration for E-Tendering & matter relating to Digital Signature, contact at Help desk of www.ireps.gov.in and phone No.- 011-23761525
18	Availability of Tender Documents	The Tender documents can be downloaded from www.ireps.gov.in Tenderer who wishes to view free Notification and Tender Documents can visit www.ireps.gov.in DFCCIL may issue Addendum (s)/Corrigendum (s) to the Tender document, if any, placed on the website www.ireps.gov.in only.

Signature of tenderer (s)
With seal

Note:

1. Tender documents should be downloaded from the website address <https://www.ireps.gov.in>. Payment of Tender Document fee & BID SECURITY, in respect of e-tendering, should be accepted through payment gateway only. Any tender received without BID SECURITY or cost of tender documents in the form as specified in the tender documents shall not be considered and shall be summarily rejected.
1. Eligibility shall be assessed on applicants, fulfilling the technical capability and competence as well as for financial and organizational resources as specified in clause No. 1.3.13 (i) A & B and Clause 1.3.13 (ii) of Preamble & General Instruction to tenders (Chapter- III).
2. The Offer shall be valid for 90 days from the date of opening of the tender and extended further if required from time to time. The Bidders cannot withdraw their offer within the period of validity/extended validity. The BID SECURITY of such tenderers shall be forfeited.
3. Notice Inviting Tender (NIT), Tender Document and Corrigendum/Addendum if any, will be posted on the E Tendering website www.ireps.gov.in. Tenderers are advised to complete all submission related work well before Time and Date for Submission of Tender Online. Any request for modification in the time/date of submission of the tender due to the tender's failure to submit his offer, will not be accepted. No request for extension of the Tender Due Date shall be considered.
4. The tender documents shall be submitted in online mode only through website www.ireps.gov.in in Single stage Two e-Packets only (**Technical Bid** and **Financial Bid**).
5. Detailed credentials as per the requirement of eligibility criteria and all tender papers except Bill of Quantities are to be submitted in technical bid.
6. Summary of Prices (**Form -3**) with % age above or below or at par on the amount of schedules "A", "at par" on amount of schedule "B" (rate for the schedule "B" items will be paid as per the rate offered by Bidder for consumables items in **Form - 3A** on actual consumption basis) along with Schedule of Prices (**Form – 4**) are to be submitted in Financial bid on online mode only.
7. No tender document will be available offline. Downloading tender documents online and submission of tender online is mandatory for this tender.
8. Any further addendum/Corrigendum for this tender will be posted in tendering portal website <https://www.ireps.gov.in> only. Interested bidders are advised to check website regularly for any Addendum/ Corrigendum.
9. DFCCIL reserves the right to cancel the tender before submission / opening of tender, postpone the tender submission / opening date and to accept / reject any or all tenders without assigning any reason thereof. DFCCIL's assessment of suitability as per eligibility criteria shall be final and binding.
10. DFCCIL reserves the right to pre-qualify the bidder(s) provisionally based on the documents submitted by them and open financial bid(s), subject to their final verification. In the event of any document being found false, the provisional qualification shall stand withdrawn, and the next lower bidder shall automatically come to the position of such disqualified bidder.
11. Information as required as per various Forms to tender documents should be submitted by the tenderers without fail strictly as per formats.
12. **Procedure for e-tendering**

10.1 Accessing/ purchasing of Tender Documents.

Signature of tenderer (s)

With seal

- 10.1.1 It is mandatory for all the Bidders to have class-III Digital Signature Certificate (DSC) from any of the licensed certifying Contractor (Bidders can see the list of licensed certifying agencies from the link www.cca.gov.in) to participate in e-tendering.
- 10.1.2 To participate in the Bidding, it is mandatory for the Bidders to register with IREPS portal to have user ID & password. IREPS portal is the only website for submission of Bid. The vendor manual containing the detailed guidelines for e-tendering is available on IREPS portal. The following may kindly be noted:
- (a) Registration with IREPS portal should be valid at least up to the date of submission of bid.
 - (b) Bids can be submitted only during the validity of registration.
13. It is also mandatory for the Bidders to get their firms registered with e-tendering portal. If the firm / Joint Venture is already registered with e-tendering service provider, and validity of registration is not expired, then the firm/Joint Venture is not required to have a fresh registration.
14. The complete Bidding Documents can be viewed / downloaded by the Bidder from IREPS portal as per the time and date mentioned on the IREPS portal.
15. Tenders shall be opened at the address given below as mentioned in NIT item No. 10 in the presence of the tenderers or their authorized representatives intending to attend the opening.
16. Tender shall be submitted as per "Preamble & General Instruction to Tenderers" forming as part of the complete tender documents.
17. Transfer of the tender document purchased by intending tenderer to another tenderer is not admissible. Tenderers can submit tenders only on the documents purchased / downloaded from the website <http://www.ireps.gov.in> by them.
18. Tenderers must read all instructions regarding e-tendering process as mentioned in PREAMBLE & GENERAL INSTRUCTIONS TO TENDERERS Part-I, Chapter-III.

Chief General Manager/PRYJ-W
For & on behalf of DFCCIL

Chapter- III

SCHEDULE OF REQUIREMENTS**1.0 Description of Work:**

SN	Description	Estimated Cost of Work (in Rs)	BID SECURITY (in Rs)	Completion period (in years)
1	Operation & Maintenance of DFCCIL's 8 nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.	Rs. 17,69,76,676.85 (Including GST@18%)	Rs. 10,34,900	36 months

2.0 Detailed breakup of quantity are as follows: -

SOR Item No	Description of Item	Unit	Qty
Schedule A (For Manpower for Operation and Maintenance of DFCCIL's RBMV)			
1	Manpower: Operation & Comprehensive Maintenance of DFCCIL's RBMVs supplied by M/S Phooltas Transrail Limited, Patna, India working on EDFC	Months	8 x 30 = 240
Schedule B (For Supply of Consumables)			
1	Lump Sum Cost of all required consumables (excluding HSD oil) during full contract duration required for DFCCIL's RBMVs.		Rs. 2,88,50,356.85

Note:

- All costs of all the above items are to be quoted in INR currency only. For tender evaluation purposes, the total cost of all the above items will be considered.
- Purchase preference under the policy of Government of India- Public Procurement Order 2017 dated 16.09.2020 (Copy attached as **Form-18** (MII) with latest amendments shall be applicable to this tender.
- Qty given against item No. 1 of Schedule A may vary up to 25% on same terms and conditions of tender/contract.
- If due to any reason RBMV is not to be operated for 15 or more days in continuation, then only 30% payment of item No. 1 of Schedule A shall be made, and O & M Contractor will be free to demobilize 70% Staff deployed for O & M of RBMVs. For this 7 Days' advance Notice shall be given by DFCCIL to O & M Contractor.
- Details of all items of main heads (Head wise) mentioned in item No.1 of Schedule B of above SOR table are required for O & M of RBMV along with the rate and other details following format are to be submitted by the bidders along with their Financial Bid:

SN	Main Heads	OEM Part No as per OEM parts catalogue	OEM Part Description as mentioned in OEM parts catalogue	Brand/Make of Item	Unit	Unit Cost without GST	% GST rate	Proposed Index for calculating PVC**

Signature of tenderer (s)
With seal

** WPI Index No. and Index Name of each shall be mentioned by Bidder for cost escalation calculation purpose.

- (vi) Housekeeping of Staff cabin and small track MC Room is to be done by DFCCIL including filling of water on OH tank.
- (vii) The rate of item No. 1 includes cost of O & M including operation of both cranes but excluding the manpower required for fixing of slings in DFCCIL material to be loaded/unloaded from RBMV
- (viii) The cost Manpower required for doing IOH is not included in rates of item No.1 of BOQ.
- (ix) O & M agency staff will not be allowed to utilise the staff cabin after completing the O & M of MC.

3. Penalties and counter Penalties as per Chapter - VI: For effective execution and monitoring of work, penalties on O & M contractor and counter penalties on DFCCIL have been prescribed vide relevant clauses of SCC, Chapter - VI of tender document and same are summarized as under:

Clause No. of SCC	Nature of Default	Rate of Penalty
1.10.7	Penalty on contractor due to deployment of Railway loco/haulage arrangement for hauling the defective track machine of O & M contractor for clearing the block section.	Rs. 1 lakh + Penalty for block bursting. For every year on the anniversary of LOA the above penalty rates shall be increased by 3% compound.
1.10.7	Penalty on contractor due to deployment of Railway Crane/ART/MFD for re-railing the derailed track machine of O & M contractor.	Penalty Rs. 4,00,000/- per case for crane and Rs. 1,00,000/- for MFD van will be charged to the contractor and will be adjusted from his running bills. For every year on the anniversary of LOA the above penalty rates shall be increased by 3% compound.
1.11	Penalty on contractor for Block bursting	Block bursting period may be grouped on basis of time of block bursting and following penalty to be levied on O & M contractor for each instance of applicable group of block bursting: - 00-15 minute: NIL, 15-30 minutes: Rs. 5,000/- 30-60 minutes: Rs. 10,000/-, > 60 minutes: Rs. 15,000/- subject to maximum Rs. 50,000/- The above rates are as on tender opening date. For every year on the anniversary of LOA the above penalty rates shall be increased by 3% compounded.
1.13	Penalty on contractor for non-availability of Machine	If more than 75 working days in a 3 months are lost on account of contractor, the payment of Item No. 1 of schedule A of SOR will be reduced proportionally. For example, if a machine is available for only 73 days, the reduced payment will be = $(73/75) \times$ the monthly payment shown in item No. 1 of schedule A of SOR.

Clause No. of SCC	Nature of Default	Rate of Penalty
1.14.3	In case of termination on Contractor Account/short closure in case of persistent Force-Majeure conditions, the O & M Contractor will remove all his establishment, materials, offices and Machines from DFCCIL premises, within 30 days.	Penalty @ Rs.10,000.00/per day/ location will be levied.
1.14.8	Penalty for not providing Operator, Technician, Helpers as per conditions of contract	Operator: Rs.5000/- per day Technician: Rs. 3000/- per day, Helper: Rs. 2000/- per day duly updated for PVC applicable for item No. 1 of schedule A of SOR.

4.0 Order of preference (higher to lower) for interpretation of different clauses in the tender/contract document is as under: -

- (a) Contract Agreement
- (b) Letter of Award
- (c) Schedule of Items, Rates & Quantities
- (d) Special Conditions of Contract
- (e) Technical specification of DFCCIL's RBMVs
- (f) General Conditions of Contract
- (g) Schedule of Dimension of DFCCIL
- (h) G & S R of DFCCIL
- (i) OEM Operation Manual
- (j) OEM Maintenance Manual and other Manuals
- (k) DFC Railroad Manual
- (l) Indian Railway Track Machine Manual

In case of any conflicting provisions in different parts of the tender document, provisions given in the portion of document having higher order of preference shall prevail over the provisions given in the portion of document having lower order of preference.

5.0 MANDATORY REQUIREMENTS OF ELECTRONIC TENDERS:

The bidder is required to fill-in and upload the following proforma giving an undertaking for submission of required information/details at the time of on-line submission of their e-bid.

SN	Requirement	Remarks
1	Have you submitted a Bid Security as per Clause 1.3.8 of ITT ? (If yes please fill-up the Bid Security No. and other details).	Bid Security No. Date..... Amount Rs....., Name of Bank issuing Bid Security.....

6.0 SPECIAL NOTES:

6.1 The e-bids are required to be submitted at www.ireps.gov.in before the time and date specified for the same.

6.2 BID SECURITY payment through online mode on IREPS. Option for submission of BID SECURITY

Signature of tenderer (s)

With seal

through manual mode is also available to all Bidders, in addition to online payment mode. Manual Payment of BID SECURITY in following form is acceptable:

- a) Bank Guarantee by bidder in prescribed proforma as per **Form - 5**. The Bank Guarantees (BGs) to be submitted by the bidders shall be sent directly to DFCCIL by the issuing bank under registered Post A.D. and a soft copy of BG be submitted along with the offer.

Regarding Security Deposit, Bidders are advised to go through clause 16 of GCC. The Security Deposit shall be 5% of the contract value.

6.3 In case the date of e-bid opening falls on a gazetted holiday or is subsequently declared as such, the e-bids will be opened on the next working date at the appointed time.

6.4 Bidders are requested to visit site www.ireps.gov.in and go through the e-tender documents carefully.

6.5 E-Bids are liable to be rejected if:

- a) Not accompanied with specified 'BID SECURITY' in the name of Bidder.
- b) Any fax/swift message/communication from the bank for establishing/ issuing the Bid Security later on will not be entertained.
- c) Received after stipulated time & date of opening.
- d) Not open for acceptance for a minimum period of 90 days from the due date of opening of bid and Bid Security is not valid for 150 days.
- e) Are non-responsive as per clause 1.3.24(d) of ITT of tender document.
- f) **Form 3 A** dully filed and signed.

6.0 Execution Co-relation and intent of contract Documents: The contract documents shall be signed in triplicate by the DFCCIL and Selected Bidder within 75 days of issue of LOA, otherwise full Bid Security will be forfeited, and the bidder will be debarred to participate in re-tendering of this work. The contract documents are complementary, and what is called for by anyone shall be as binding as if called for by all, the intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of work.

PREAMBLE

&

GENERAL INSTRUCTION TO TENDERERS

Chapter- IV

PREAMBLE & GENERAL INSTRUCTIONS TO TENDERERS

1.3.1 Introduction

(i) General

Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL), a public sector undertaking under Ministry of Railways (MOR), has been set up under the Indian Companies Act, 1956 for implementation of Dedicated Freight Corridor Project. Government of India is the sole shareholder of the DFCCIL for construction and operation of Dedicated Freight Corridor (DFC). The coverage of Eastern Corridor is from Ludhiana to Sonnagar and Western Corridor is planned from Jawaharlal Nehru Port, Mumbai to Dadri near Delhi with linkage at New Dadri.

DFCCIL is procuring 8 Nos of RBMVs from M/s Phooltas, India

(ii) Name of Work

Operation & Maintenance of DFCCIL's 8 nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.

(iii) Scope of Work

The scope of work covers Operation & Maintenance of 8 Nos of RBMVs for 3 years including supply of consumables required for Operation and maintenance of RBMVs.

Cost of the work: The estimated cost of the tendered work is approximately ₹.17,69,76,676.85 (inclusive 18% GST).

- (iv)** The tender shall be governed by General Conditions of Contract (GCC), Preamble and General Instructions to Tenderers (ITT) and Special Conditions of Contract (SCC), Wherever, there is a conflict in any condition between GCC and Special Conditions of Contract mentioned in the tender documents, the condition mentioned in Special Conditions of Contract will prevail. However, the Engineer's decision in this connection shall be final and binding.

(vii) Location

O & M Works of individual RBMV to be executed normally in following IMDs, but depending on need O & M work can be anywhere in the jurisdiction of entire DFC and the O & M contractor shall be bound to execute the work without any extra cost even in entire DFC network:

SN	Name of IMD	Packet Name
1	New Chawaipal	A
2	New Tapri	
3	New Khurja	B
4	New Ekdil	
5	New Kanpur	C
6	New Karchana	

Signature of tenderer (s)
With seal

7	New DDU	D
8	New Sonnagar	

Note: The complete contract management will be done packet wise individually by the concerned CGM unit in whose jurisdiction IMDs exist after award of work and CGM PRYJ will process final closure of contract.

1.3.2(a) Tender Bid

The Tender Bid shall be submitted online in Single Stage Two Packet system only on website www.ireps.gov.in as under: -

Packet 1 (Technical Bid) - Eligibility/Qualifying element of the Tender Bid along with other documents mentioned in para 1.3.2 (b) (i), here in after called **“TECHNICAL BID”**.

Packet 2 (Financial Bid) - Price elements of the Tender Bid as per para 1.3.2 (b) (ii), herein after called **“FINANCIAL BID**. Financial Bid of only those bidders who qualify the technical bid will be opened.

The detailed procedure for tender opening and processing is given in Para 1.3.5.

1.3.2(b) Form of Tender

The Tender documents shall be in two packets: **Packet 1 (Technical Bid)** shall contain all tender papers as per this tender including all details of credentials as per the requirement of eligibility criteria excluding **Form – 3** and **Form – 3A**. **Packet 2 (Financial Bid)** shall contain Summary of prices as per Form – 3 (online quote) along with uploading of details of **Form – 3A**.

Any tender received later than the time and date of submission of tenders shall be rejected.

Tenders not submitted in the proper Forms are liable to be rejected.

(i) Documents to be enclosed with the Technical BID -

S. No	Description	Documents
(1)	Offer letter complete.	Form No.1
(2)	Tenderer's credentials in accordance With para 1.3.13 (i) and (ii) of Preamble and General Instructions to Tenderers.	Form No. 2A, 2B & 2C
(3)	Certificates for authenticity of documents	Form -17
(4)	Earnest money/Security Deposit in accordance with Para 1.3.8 and Cost of Tender Document in case of downloaded tenders in accordance with Para1.3.4.3 of Preamble and General Instructions to Tenderers in an envelope.	
(5)	Written confirmation authorizing the signatory (in Form -9/13) of the tender to commit the tender and other documents as per format as applicable, in accordance with para 1.3.6 of Preamble and General Instructions to Tenderers.	

Signature of tenderer (s)
With seal

(6)	Form -10, 12 and 14, if applicable
(7)	Minimum Local content Certificate as per Form-18(MII)
(8)	All items of Responsiveness as per Form-19 (except financial quote and Form -3, Form -3A)

(ii) Documents to be enclosed with the Financial BID -

S. No	Description	Documents
(1)	Summary of Prices, Schedule of Prices & Total Prices	Form – 3, Form -3A (Financial schedule on www.ireps.gov.in)

1.3.3 Tender Document

This tender document consists of the following seven chapters in addition to Instructions to bidders for Online bidding:

CHAPTERS	DESCRIPTION
Chapter I	Instructions to bidders for Online bidding
Chapter II	Notice Inviting E-Tender (NIT)
Chapter III	SOR
Chapter IV	Preamble and General Instructions to Tenderers (ITT)
Chapter V	General Conditions of Contract
Chapter VI	Special Conditions of Contract
Chapter VII	From 1 to 28 and Annexure I to VI

1.3.4 Sale and Submission of Tender Document

1341 Tender document can be viewed from DFCCIL's website www.dfccil.com, www.ireps.gov.in. Amendment(s) (if any) will be uploaded on DFCCIL website www.dfccil.com and www.ireps.gov.in only. For submitting the tender, the Tender documents and amendment(s) can be downloaded from the www.ireps.gov.in by the registered tenderers only.

1342 Clause applicable for tender documents downloaded from the Internet
Tenderer/s is free to download tender documents at their own cost, for the purpose of perusal as well as for using the same as tender document for submitting their offer. Master copy of the tender document will be available in the Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2nd floor, DFCC Operation Control Center, Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India. After the award of the work, an agreement will be drawn up. The agreement shall be prepared based on the master copy available in the Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2nd floor, DFCC Operation Control Center, Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India and not based on the tender documents submitted by the Tenderer. In case of any discrepancy between the tender documents downloaded from the internet and the master

copy, later shall prevail and will be binding on the Tenderers. No claim on this account shall be entertained.

1.343 Cost of Tender documents downloaded from the internet

For submitting the tender, the Tender documents, and Amendment(s), if any, is/are available on www.ireps.gov.in and the same can be downloaded and used as tender documents for submitting the offer. The cost of the tender document is indicated in NIT. The cost of the tender document shall be deposited through e-payment mode at www.ireps.gov.in only. In case, the cost of the tender document as detailed above is not deposited, tender will be summarily rejected.

1.344 Complete tender documents must be submitted online duly completed in all respects up to the scheduled date and time mentioned in the Notice Inviting E-Tender. In case the intended date for opening of tenders is declared that holiday, the tenders will be opened on the next working day at the same time. Any modified date and time for online submission of tenders shall be uploaded on DFCCIL website www.ireps.gov.in/DFCCIL or www.dfccil.com.

1.345 Each page of the tender papers is to be digitally signed by the tenderers or such person/s on his/their behalf that is/are legally authorized to sign for him / them.

1.346 Care in Submission of Tenders –

- (i) Before submitting a tender, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the works, that all conditions liable to be encountered during the execution of the works are taken into account and that the quoted rates by tenderer in tender forms are adequate and all-inclusive in item of Taxes, Duties & Levies etc. in terms of General/Special Conditions of Contract for the completion of works to the entire satisfaction of the Employer.
- (ii) Tenderers will examine the various provisions of the Central Goods and Services Tax Act, 2017(CGST)/Integrated Goods and Services Tax Act, 2017(IGST)/Union Territory Goods and Services Tax Act, 2017(UTGST)/respective state's State Goods and Services Tax Act (SGST) also, as notified by Central/State Govt. & as amended from time to time and applicable taxes before bidding. Tenders will ensure that full benefit of Input Tax (ITC) likely to be availed by them is duly considered while quoting rates.
- (iii) The successful tenderer who is liable to be registered under CGST/IGST/UTGST/SGST Act shall submit GSTIN along with other details required under CGST/IGST/UTGST/SGST Act to DFCCIL immediately after the award of contract, without which no payment shall be released to the contractor. The contractor shall be responsible for the deposition of applicable GST to the concerned authority.

1.347 Tenders containing erasures and/or alteration of the tender documents are liable to be rejected. Any correction made by Tenderer(s) in his/their entries must be attested by him/them.

1.348 All communication between the DFCCIL and the tenderer shall be in writing. For the purpose of seeking clarification, the Employer's address is:
Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2nd floor, DFCC Operation Control Center, Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India.

1.349 Conditional tenders are liable to be rejected straightway. DFCCIL reserves the right to reject such tenders summarily without assigning any reasons whatsoever. In case tenderer/s still

decide to have conditional offer, all such conditions are required to be listed separately and shall be supplemented by the details of exact financial implications, if applicable. DFCCIL will not take cognizance of any other conditions / variations from the tender stipulations mentioned at any other place in the tender documents.

1.3.4.10 The bidder shall submit only one bid in the capacity of an individual or sole proprietor, partnership firm or company/ **JV**. On violation of this condition all tenders in which violator bidder have participated will be disqualified and BID SECURITY of all such tenderers shall stand forfeited.

1.3.4.11 Withdrawal of Tender: No tender can be withdrawn after scheduled date and time of submission and during tender validity period.

1.3.5 Opening of Tender:

- (a) Tender will be opened at the scheduled date and time mentioned in the Notice Inviting E-Tender.
- (b) After the opening of the tender documents of all the tenderers, these bids shall be scrutinized and analyzed. If found necessary by the DFCCIL, the tenderers shall be asked to furnish clarifications and the DFCCIL may also hold discussions with the tenderers after giving due notice. The names of the tenderers whose bid are considered complete and meet eligibility criteria shall be short listed.
- (c) The earnest money of non-qualifying tenderers will be returned within a reasonable period.

1.3.6 Constitution of the Firm: -

1.3.6.1 The tenderer shall clearly specify whether the tender is submitted on his own (Proprietary Firm) or on behalf of a Partnership Firm / Company/ Registered Society / Registered Trust / HUF etc. The tenderer(s) shall enclose the attested copies of the constitution of their concern and copy of PAN Card along with their tender. Tender Documents in such cases are to be signed by such a person as may be legally competent to sign them on behalf of the firm, company, association, trust or society, as the case may be.

1.3.6.2 The tenderer shall give full details of the constitution of the Firm /JV/Company and shall also submit following documents (as applicable), in addition to documents mentioned above:

(a) Sole Proprietorship Firm:

- (i) An undertaking that he is not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of the partnership firm or JV in which he was / is a partner/member. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the General Conditions of Contract.

(b) HUF:

- (i) A copy of notarized affidavit on Stamp Paper declaring that he who is submitting on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of

HUF.

- (ii) An undertaking that the HUF is not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of the partnership firm or JV in which HUF was/is a partner/member. Concealment/wrong information in regard to above shall make the contract liable for determination under Clause 62 of the General Conditions of Contract.

(c) Partnership Firm:

The tenderer shall submit documents as mentioned in clause 1.3.34 of the Preamble & general instructions to Tenderers.

(d) Joint Venture (JV):

The tenderer shall submit documents as mentioned in Clause 1.3.33 of the Preamble & general instructions to Tenderers.

(e) Company registered under Companies Act 2013:

- (i) The copies of MOA (Memorandum of Association) / AOA (Articles of Association) of the company.
- (ii) A copy of the Certificate of Incorporation.
- (iii) A copy of Authorization/Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender on behalf of the company and create liability against the company.
- (iv) An undertaking that the Company is not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of the partnership firm or JV in which the Company was / is a partner/member. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the General Conditions of Contract.

(f) LLP (Limited Liability Partnership):

If the tender is submitted on behalf of a LLP registered under LLP Act-2008, the tenderer shall submit along with the tender:-

- (i) A copy of LLP Agreement.
- (ii) A copy of the Certificate of Incorporation.
- (iii) A copy of Power of Attorney/Authorization issued by the LLP in favour of the individual to sign the tender on behalf of the LLP and create liability against the LLP.
- (iv) An undertaking that the LLP is not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of opening of bids, either in individual capacity or as a member of JV in which the LLP was / is a member. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the General Conditions of Contract.

(g) Registered Society & Registered Trust: The tenderer shall submit:

- (i) A copy of the Certificate of Registration.
 - (ii) A copy of Deed of Formation.
 - (iii) A copy of Power of Attorney in favour of the individual to sign the tender documents and create liability against the Society/Trust.
- (h) If it is NOT mentioned in the submitted tender that tender is being submitted on behalf of a Sole Proprietorship firm / Partnership firm / Registered Company etc., then the tender shall be treated as having been submitted by the individual who has signed the tender.
- (i) After opening of the tender, any document pertaining to the constitution of Sole Proprietorship Firm / Partnership Firm / Registered Company/ Registered Trust / Registered Society / HUF etc. shall be neither asked nor considered, if submitted. Further, no suo moto cognizance of any document available in public domain (i.e., on internet etc.) or in DFCCIL's record/office files etc. will be taken for consideration of the tender, if no such mention is available in tender offer submitted.
- (j) DFCCIL will not be bound by any change in the composition of the firm made subsequent to the submission of the tender. DFCCIL may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Bidders.
- (k) The tenderer whether sole proprietor / a company or a partnership firm / registered society / registered trust / HUF etc if they want to act through agent or individual partner(s), should submit along with the tender, a copy of power of attorney (as per format given in RFP) duly stamped and authenticated by a Notary Public or by Magistrate in favour of the specific person whether he/they be partner(s) of the firm or any other person specifically authorizing him/them to submit the tender, sign the agreement, receive money, co- ordinate measurements through contractor's authorized engineer, witness measurements, sign measurement books, compromise, settle, relinquish any claim(s) preferred by the firm and sign "No Claim Certificate" and refer all or any disputes to arbitration. The above power of attorney shall be submitted even if such specific person is authorized for above purposes through partnership deed / Memorandum of Understanding / Article of Association or such other document, failing which tender is liable to be rejected.

1.3.6.3 If it is mentioned in the tender submission that it is being submitted on behalf of / by a sole Proprietorship Firm / Partnership Firm / registered Company etc. but above-mentioned documents (as applicable) are not enclosed along with tender, the tender shall be summarily rejected.

If it is NOT mentioned in the tender submission that it is being submitted on behalf of /by a Sole Proprietorship Firm / Partnership Firm / Registered company etc., then the tender shall be treated as having been submitted by the individual who has signed the tender.

After opening of the tender, any document pertaining to the constitution of the Firm/ shall neither be asked nor be entertained / considered by DFCCIL.

1.3.6.4 DFCCIL will not be bound by any power of attorney granted by the tenderer or by changes in the composition of the Firm made subsequent to the submission of tender. It may, however, recognize such power of attorney and changes after obtaining proper legal advice.

1.3.7 Validity of Tender:

The tender shall keep his offer open for a minimum period of 90 days from the date of

opening of the tender or as mentioned in the Tender Notice.

1.3.8 Bid Security:

- (a) The tender must be accompanied by Bid Security in favour of 'Dedicated Freight Corridor Corporation of India Limited, CGM/PRYJ-W deposited in any of the forms as mentioned in Sub - Para1.3.8(c) below, failing which the tender will not be considered. Any firm recognized by the Department of Industrial Policy and Promotion (DIPP) as 'Startups' shall be exempted from payment of the Bid Security. Labour Cooperative Societies shall submit only 50% of the Bid Security.
- (b) The Bid Security shall remain deposited with the DFCCIL for the period of validity of the offer prescribed in this tender i.e. 90 days from the date of opening of tender. In case of BID SECURITY being submitted in form of Bank Guarantees, the Bank Guarantee shall remain valid for 60 days beyond the validity of the bid. If the validity of the offer is extended, the validity of Bid Security should also be extended, failing which the offer after the expiry of the aforesaid period may not be considered by DFCCIL. The proof of submission of BID SECURITY should be uploaded along with the Technical Bid.
- (c) The Bid Security should be in any of the following forms:
 - (i) The Bid Security shall be deposited either in cash through e-payment gateway on <https://www.ireps.gov.in>.

Or,

- (ii) Bank Guarantee on format from Nationalized/Indian Scheduled Commercial Bank. Bank guarantees shall remain valid for 60 days beyond the validity of the bid. Sample format for Bank Guarantee for BID SECURITY is enclosed as **Form – 5**.

In case, submission of Bid Security in the form of Bank Guarantee, following shall be ensured:

- i) A scanned copy of the Bank Guarantee shall be uploaded on e-Procurement Portal(<https://www.ireps.gov.in>) while applying to the tender.
 - ii) Non submission of scanned copy of Bank Guarantee with the bid on e-tendering portal (<https://www.ireps.gov.in>) shall lead to summary rejection of bid.
- (d) It shall be understood that the tender documents have been sold/issued to the tenderer and the tenderer is permitted to tender in consideration of stipulation on his part, that after submitting his tender he will not resale from his offer or modify the terms and conditions, thereof in a manner not acceptable to the DFCCIL. Should the tenderer fail to observe or comply with the said stipulation, the aforesaid amount shall be liable to be forfeited by the DFCCIL.

- (e) The original instruments of Bid Security (Bank Guarantee-in original) have to be submitted to DFCCIL's office before the scheduled date and time of submission of the tender otherwise the Bid may not be considered.
- (f) The Bid Security of the unsuccessful tenderer(s) will, save as here-in-before provided, be returned to the unsuccessful tenderer(s) within a reasonable time but the DFCCIL shall not be responsible for any loss or depreciation that may happen for the due performance of the stipulation to keep the offer open for the period specified in the tender documents or to the Bid Security while in their possession or be liable to pay interest thereon. No interest shall be paid by DFCCIL on Bid Security amount.

1.3.9 Execution of Contract Agreement: -

The successful tenderer, whose tender has been accepted by the competent authority of DFCCIL, will be informed by the DFCCIL through a Letter of Acceptance (LoA). Letter of Acceptance after it is signed by the Contractor in token of his acceptance shall constitute a legal and binding contract between DFCCIL and the contractor till such time the contract agreement is signed.

The Tenderer whose tender is accepted shall be required to appear in person at the Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2nd floor, DFCC Operation Control Center, Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India or if a firm or corporation, a duly authorized representative shall so appear and execute the contract agreement within 75 days after notice that the contract has been awarded to him. Failure to do so shall constitute a breach of the agreement affected by the acceptance of the tender in which case the full value of the earnest money accompanying the tender shall stand forfeited without prejudice to any other rights or remedies.

In the event of any tenderer whose tender is accepted refuses to execute the contract agreement as here in before provided, DFCCIL may determine that such tenderer has abandoned the contract and there upon his tender and acceptance thereof shall be treated as cancelled and DFCCIL shall be entitled to forfeit the full amount of the Earnest Money.

1.3.10 Security Deposit on Acceptance of Tender: As per clause 16 of GCC provisions.

1.3.11 Tenderer's Address

The tenderer should state in the tender his postal address legibly and clearly. Any communication sent in time, to the tenderer by post at his said address shall be deemed to have reached the tenderer duly and in time. Important documents should be sent by registered post.

1.3.12 Right of DFCCIL to Deal with Tenders

- (a) DFCCIL reserves the right not to invite tenders for any of DFCCIL work or works or to invite open or limited tenders and when tenders are called to accept a tender in whole or in part or to reject any tender or all tenders without assigning reasons for any such action.
- (b) The authority for the acceptance of the tender will rest with DFCCIL. It shall not be obligatory on the said authority to accept the lowest tender or any other tender and no tenderer(s) shall demand any explanation for the cause of rejection of his/their tender

Signature of tenderer (s)
With seal

nor the DFCCIL undertake to assign reasons for declining to consider or reject any particular tender or tenders.

1.3.13(i) Eligibility Criteria

(A) Technical Eligibility Criteria

Bidder must have experience of operation and/or maintenance of one or more on-track machine(s) for minimum duration of 12 months in India as on tender opening date.

Definition of Eligible Project- Operation and/or Maintenance of on-track machine(s).

Note:

1. In case the tenderer/s is a partnership firm, the work experience shall be in the name of partnership firm only.
2. **Eligible Projects/**Technical Experience Certificates from Govt. organization /PSUs/Public Limited Company will be accepted. The certificate from Private individual/Private Company for whom such works are executed shall not be accepted.
3. Technical experience/Eligible Project work done certificate from private individual shall not be considered. However, in addition to work experience certificates issued by any Govt. Organization, work experience certificate issued by Public listed company having average annual turnover of Rs 500 crore and above in last 3 financial years excluding the current financial year, listed on National Stock Exchange or Bombay Stock Exchange, incorporated/registered at least 5 years prior to the date of opening of tender, shall also be considered provided the work experience certificate has been issued by a person authorized by the Public listed company to issue such certificates.
4. In case tenderer submits technical experience/Eligible Project work done certificate issued by public listed company, the tenderer shall also submit along with work experience certificate, the relevant copy of work order, bill of quantities, duly certified by Chartered Accountant, TDS certificates for all payments received and copy of final/last bill paid by company in support of above work experience certificate.

(B) **Financial Eligibility Criteria**

Criteria Requirement	Compliance Requirement		Submission Requirements
	Single Entity	Joint Venture	
The tenderer must have minimum average annual contractual turnover of V/N crore or V whichever is less ; where V= Advertised value of the tender in crores of Rupees N= Number of years prescribed for completion of work for which bids have been invited. The average annual contractual turnover shall be calculated as an average of “total contractual payments” in the previous three financial years, as per the audited balance sheet. However, in case balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover. The tenderers shall submit requisite information as per Form - 2B , along with copies of Audited Balance Sheets duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.	Must meet requirement	JVs as a whole	The tenderers shall submit Certificates to this effect which may be an attested Certificate from the concerned department / client or Audited Balance Sheet duly certified by the Chartered Accountant/ Certificate from Chartered Accountant duly supported by Audited Balance Sheet.

Note: In case the tenderer/s is a partnership firm, the turnover work done value etc. shall be in the name of partnership firm only.

1. Contractual payments received by a Member in an earlier JV firm shall be reckoned only to extent of the concerned member's share in that JV Firm for the purpose of satisfying compliance of the above-mentioned financial eligibility criteria in tender for considerations.
2. Any payment received as PVC for value of work done shall be considered and no separate evaluation for each component of that work shall be made to decide eligibility.
3. In case of newly formed partnership firm, the credentials of individual partners from previous propriety firm(s) or dissolved previous partnership firm(s) or split previous partnership firm(s), shall be considered only to the extent of their share in previous entity on the date of dissolution / split and their share in newly formed partnership firm. For example, a partner A had 30% share in previous entity and his share in present partnership firm is 20%. In the present tender under consideration, the credentials of partner A will be

Signature of tenderer (s)
With seal

considered to the extent of 0.3*0.2*value of the work done in the previous entity. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.

4. In case of existing partnership firm, if any one or more partners quit the partnership firm, the credentials of remaining partnership firm shall be re-worked out i.e., the quitting partner(s) shall take away his credentials to the extent of his share on the date of quitting the partnership firm (e.g. in a partnership firm of partners A, B & C having share 30%, 30% & 40% respectively and credentials of Rs 10 crore; in case partner C quits the firm, the credentials of this partnership firm shall remain as Rs 6 crore). For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deed(s), dissolution deed(s) and proof of surrender of PAN No.(s) in case of dissolution of partnership firm(s) etc.
5. In the case of an existing partnership firm if any other partner(s) joins the firm, the credentials of partnership firm shall get enhanced to the extent of credentials of newly added partner(s) on the same principles as mentioned in item 6 above. For this purpose, the tenderer shall submit along with his bid all the relevant documents which include copy of previous partnership deeds, dissolution/splitting deeds and proof of surrender of PAN No.(s) in case of dissolution of partnership firm etc.
6. Any partner in a partnership firm cannot use or claim his credentials in any other firm without leaving the partnership firm i.e., In a partnership firm of A&B partners, A or B partner cannot use credentials of partnership firm of A&B partners in any other partnership firm or propriety firm without leaving partnership firm of A&B partners.
7. In case a partner in a partnership firm is replaced due to succession as per succession law, the proportion of credentials of the previous partner will be passed on to the successor.
8. If the percentage share among partners of a partnership firm is changed, but the partners remain the same, the credentials of the firm before such modification in the share will continue to be considered for the firm as it is without any change in their value. Further, in case a partner of partnership firm retires without taking away any credentials from the firm, the credentials of partnership firm shall remain the same as it is without any change in their value.
9. In a partnership firm "AB" of A & B partners, in case A also works as propriety firm "P" or partner in some other partnership firm "AX", credentials of A in propriety firm "P" or in other partnership firm "AX" earned after the date of becoming a partner of the firm AB shall not be added in partnership firm AB.
10. In case a tenderer is LLP, the credentials of tenderer shall be worked out on above lines similar to a partnership firm.
11. In case company A is merged with company B, then company B would get the credentials of company A also.

Note:

In case, the tenderer/s failed to submit the above statement along with offer, their/his offer shall be considered as incomplete and will be rejected summarily.

1.3.13 (ii) Credentials of Tenderer

The tenderer shall provide satisfactory evidence in support of their technical and financial eligibility, which are acceptable to DFCCIL, as follows:

- (a) For Technical eligibility criteria, the details will be submitted in **Form - 2A** along with supporting documents.

Signature of tenderer (s)
With seal

- (b) For Financial eligibility criteria, the details will be submitted in **Form - 2B** along with supporting documents.

The following will be applicable for evaluating the eligibility, the tenderer shall be considered disqualified/in-eligible If:

- The Tenderer or any of its partners and/or subcontractors included in the tender has been banned for business with Ministry of Railways/DFCCIL along with any of its attached and subordinate offices through an order issued by Ministry of Railways as per list available on Website (<http://www.indianrailways.gov.in>) of Railway Board pertaining to banning of Business, with the banning being valid as on the date of submission the Tender.
- The Tenderer or any of its partners has suffered bankruptcy / insolvency or it is in the process of winding-up or there is a case of insolvency pending before any Court on the deadline of submission of application.
- For the purposes of conversion of foreign currency to Indian rupees (INR) Bank Currency (BC) selling exchange rates as published by State Bank of India on the date 28 days prior to date of submission of tender shall be used. For few of the currencies where BC selling rates are not published by SBI or reserve bank of India, the exchange rate may be obtained from website- <http://www.oanda.com/currency/historical-rates> or <http://www.xe.com>.
- For the purpose of evaluation of proposals, all values given in INR in eligible qualification criteria and the values provided by the applicants in the proposal in the currencies other than INR shall be converted into one i.e. INR as per the exchange rate mentioned in para (vi) above.

1.3.13 (iii) System of Verification of Tenderer's Credential:

1. For this tender, it has been decided to adopt the certificate based (Form self- attested is required. Signature, Stamp on Each Page). The tenderer shall submit, along with the tender document, documents in support of his/their claim to fulfill the legibility criteria as mentioned in the tender document. Each page of the copy of documents/certificates in support of certificates submitted by the tenderer shall be self- attested/ digitally signed by the tenderer or authorized representative of the tendering firm. Self –attestation shall include signature, stamp and date (on each page).
2. The tenderers shall submit a certificate stating that they are not liable to be disqualified, and all their statements/documents submitted along with bid are true and factual. The standard format of the certificate to be submitted by the bidder is enclosed as **Form -17**. Non submission of a certificate (**Form - 17**) by the bidder shall result in summary rejection of his/their bid. And it shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self-attested by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document. It will not be obligatory on the part of the Tender Committee to scrutinize beyond the submitted document of tenderer as far as his qualification for the tender is concerned.
3. DFCCIL reserves the right to verify all statements, information and documents submitted by the bidder in his tender offer, and the bidder shall, when so required by

the DFCCIL, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification, by the DFCCIL shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any right of the DFCCIL.

4. In case of any wrong information submitted by tenderer, the contract shall be terminated, BID SECURITY and Performance (PG) of contract forfeited and agency barred for doing business on entire DFCCIL 5 (five) years.

1.3.14 Period of Completion

The entire work is required to be completed in all respects within 36 months from the date of issue of the acceptance letter. Time is the essence of contract. The contractor shall be required to maintain steady and regular progress to the satisfaction of the Engineer to ensure that the work will be completed in all respects within the stipulated time.

1.3.15 Pre-Bid Meeting

A pre-bid meeting has been planned. It will be in physical and/or virtual mode. Link for the virtual meeting will be shared on the website www.dfccil.com or www.ireps.gov.in. Details of the Pre-Bid meeting have been provided in the NIT and General Information / Data Sheet. Tenderer should give their queries in writing at least 3 days prior to Pre-bid meeting. All interested firms / contractors may attend the Pre-bid conference. DFCCIL response to queries will be posted on the DFCCIL's website www.dfccil.com and [/www.ireps.gov.in](http://www.ireps.gov.in). Non-attendance at the pre-bid conference will not be a cause for disqualification of the bidder. All communication between the Employer and the tenderer shall be in writing. For the purpose of seeking clarification, the Employer's address is:

Office of Chief General Manager, Dedicated Freight Corridor Corporation of India Ltd, 2nd floor, DFCC Operation Control Center, Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar Pradesh, India.

If the Tenderer/s deliberately gives any wrong information about credentials/ documents in his/their tenders and thereby create(s) circumstances for acceptance of his/their tender, DFCCIL reserves the right to reject such tender at any stage, besides, shall suspend business with such tenderer. The BID SECURITY of such tenderers shall also be forfeited.

1.3.16 Quantum of work and materials:

The indicative schedule of quantities of various items of works is included in **Form – 4** of RFP of the tender documents and also detailed in Schedule of Requirement (**Chapter-II**) of this RFP.

1.3.17 DFCCIL is not bound to accept any tender

The employer shall not be bound to accept the lowest or any tender or to assign any reason for non-acceptance or rejection of a tender. The employer reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender papers or to accept any tender for less than the tendered quantities without assigning any reason whatsoever.

1.3.18 Schedule of Prices

The **Form - 4** of BID Documents List out the Schedule of Prices for various items. Based on these, the total tender value has also been worked out.

1.3.18.1 All consumable items of RBMV's have to be classified under the following Main Heads separately for RBMV:

- a. Consumables- Oils, Lubricants, Coolants
- b. Consumables- All types of Filters.

1.3.18.2 Details of all items of main heads (Head wise) mentioned in item No.1.3.18.1 above, are required for O & M of RBMV along with the rate and other details required in following format (**Form – 3A**) are to be submitted by the bidders along with their Bid:

SN	Main Head as mentioned in item No 1.3.18.1	OEM Part No as per OEM parts catalogue	OEM Part Description as mentioned in OEM parts catalogue	Brand/Make of Item	Unit	Unit Cost without GST	% GST rate	Proposed Index for calculating PVC
1	2	3	4	5	6	7	8	9

Note:

- a) WPI Index No. and Index Name of each item shall be mentioned by Bidder for cost escalation purpose.
- b) In case, any Zonal Railway of Indian Railway issue any purchase order of some consumable required for Indian Railway Track machine whose brand, make and type is same as mentioned OEM parts catalog of the DFCCIL's to selected Bidder or any other vender of this tender after award of this work even then payment to selected bidder of this tender will be made as per accepted rate of purchase order (PO)/Rate Contract LOA/AMC LOA issued by Zonal Railways of the accepted rate of this tender whichever is lowest. Priority of selection rates will be in order Northern Railway, Western Railway, Central Railway, East Central Railway, North Central Railway and other Zonal Railways).

1.3.19 Performance Guarantee: PG shall be 5 % of contract value: For details refer to the relevant clause of GCC. The Format of B.G is attached as **Form -7**.

1.3.20 The tenderer shall furnish information for making payment through ECS/ NEFT / RTGS (Tender **Form - 8** placed at Chapter-VII of the tender documents).

1.3.21 Negotiation:

In case DFCCIL decides to negotiate with a view to bring down the rates, and the tenderer called for negotiations should furnish the following form of declaration before commencement of negotiations?

"I.....do declare that in the event of failure of contemplated negotiations relating to Tender No.-----dated-----my original tender shall

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remain open for acceptance on its original terms and conditions,”

1.3.22 Site Inspection:

Tenderers are requested to inspect the Machine which is offered for O & M and carry out careful examination of the same to satisfy them to the nature of work involved and facilities available at the DFCCIL sites. They should also study the suitability of utilizing the different equipment and the machinery that they intend to use for the execution of the work.

1.3.23 No form C & D shall be issued to the contractor for this work.

1.3.24 Preliminary examination of bids

- (a) The DFCCIL shall examine the bids to determine whether they are complete, whether any computational errors have been made, whether the documents have been properly signed and whether the bids are generally in order.
- (b) Arithmetical errors shall be rectified on the following basis if found. If there is a discrepancy between the unit price and the total price, which is obtained by multiplying the unit price and quantity, or between subtotals and the total price, the unit or subtotal price shall prevail, and the total price shall be corrected.
- (c) The rates should be quoted in figures as well as in words. If there is variation between rates quoted in figures and in words, the rate quoted in 'words' shall be taken as correct. If more than one or improper rates are tendered for the same item, the tender is liable to be rejected.
- (d) Prior to the detailed evaluation, DFCCIL shall determine whether each bid is of acceptable quality, is generally complete and is substantially responsive to the bidding documents. For purposes of this determination, a substantially responsive bid is one that conforms to all the terms, conditions and specifications of the bidding documents without material deviations, objections, conditionality or reservation. A material deviation, objections, conditionality or reservation is one:
 - i. That affects in any substantial way the scope, quality or Performance of the contract.
 - ii. That limits in any substantial way, inconsistent with the bidding documents, the DFCCIL's rights or the successful Bidder's obligations under the contracts; or
 - iii. Whose rectification would unfairly affect the competitive position of other Bidders who are presenting substantially responsive bids.
 - iv. If a bid is not substantially responsive, it shall be rejected by the DFCCIL.
 - v. In case of tenders containing any conditions or deviations or reservations about contents of tender document. DFCCIL can summarily reject such tender.
 - vi. Non submission of all documents as mentioned in **Form – 19**.

1.3.25 Evaluation and comparison of tenders

In case of open tenders, bids, which are determined as substantially responsive, shall be evaluated based on criteria as given in Eligibility Criteria” and as given in Notice Inviting E-Tender. The tenderer must submit all necessary authentic data with necessary supporting certificates of the various items of evaluation criteria failing which his tender is liable to be rejected.

Technical Bid

The Bidder who qualifies Technical and Financial Eligibility Criteria as detailed in 1.3.13(i) A and 1.3.13(i) B and also satisfies all laid down provisions of this tender shall be selected for opening of Financial Bid.

Financial Bid

The Bidder who have quoted lowest Bid value among the selected bidders on the basis of Technical Bid selection and also had submitted the details asked in **Form -3A** shall be selected for award of this work.

1.3.26 Canvassing

No tenderer is permitted to canvass to DFCCIL on any matter relating to this tender. Any Tenderer found doing so may be disqualified and his bid may be rejected.

1.3.27 Award of Contract

1. DFCCIL shall notify the successful tenderer in writing by a Registered Letter/Email or through bearer that his tender has been accepted.
2. Letter of Acceptance after it is signed by the Contractor in token of his acceptance shall constitute a legal and binding contract between DFCCIL and the contractor till such time the contract agreement is signed.

1.3.28 Understanding and Amendments of Tender Documents:

1. The bidder must own all responsibilities and bear all cost for obtaining all the information including risks, contingencies & other circumstances in execution of the work. It shall also carefully read and understand all its obligations & liabilities given in tender documents.
2. The bidder is advised to visit and examine the site where the work is to be executed, and its surroundings or other areas as deemed fit by the bidder and should obtain at his own cost all the information that may be necessary for preparing the bid and execution of the contract. The cost of visiting the site and collecting relevant data shall be at the bidder's own expense. It is a condition of the tender that the tenderer is deemed to have visited the site and satisfied himself with all the conditions prevailing including any difficulties executing the work.
3. At any time prior to the deadline for submission of bids, DFCCIL may for any reason whether at its own initiative or in response to any request by any prospective bidder amend the bidding documents by issuing Amendment, which shall be part of the Tender documents.
4. DFCCIL may at its discretion extend the deadline for submission of the bids at any time before the time of submission of the bids.

1.3.29 Provision for medium & small enterprises (MSE):

As mandated by Railway Board Letter No. 2010/RS (G)/363/1 dated 05.07.2012 (RBS No. 4/2012), in compliance to public procurement policy, following provisions are included for Medium & Small Enterprises (MSE) in the tender document.

1. MSEs registered with the listed agencies for the item tendered will be exempted from payment of Earnest Money. They have to submit Bid Security Exemption Declaration Form in **Form -6**
2.
 - i. MSEs who are interested in availing themselves of these benefits will enclose with their offer proof of their being MSE registered.
 - ii. The MSEs must also indicate the terminal validity date of their registration.
 - iii. Failing (i) & (ii) above, such offers will not be liable for consideration of benefits detailed in MSE latest notification of Government of India .
2. All bidders registered under Micro, Small and Medium Enterprises (MSMEs) shall have to satisfy the eligibility criteria at par with other bidders. There shall not be any relaxation in eligibility criteria/tender process or other tender requirements and L-1 price.
3. The above facilities shall not be applicable for the items for which they are not registered.
4. The tenderer (s) shall submit copy of current and valid MSMEs registration certificate inclusive of all the pages showing the category of entrepreneur – whether the registered firm is owned by General or SC/ST entrepreneurs, monetary limit of their registration for the items tendered to avail the benefits under the policy. The MSMEs shall also submit a copy of “Entrepreneur’s Memorandum (Part-II)” of the concerned district centre where the unit is established.
5. Registration of Udyog Aadhar Memorandum (UAM): All Micro, Small and Medium Enterprises (MSMEs) bidders are required to declare UAM Number on CPPP /www.ireps.gov.in failing which such bidders will not be able to enjoy the benefits as per Public Procurement Policy for tenders invited electronically through CPPP /www.ireps.gov.in

1.3.30 Employment/Partnership etc. of Retired Railway/DFCCIL Employees:

(a) Should a tenderer

- (i) be a retired Engineer of the gazetted rank or any other gazetted officer working before his retirement, whether in the executive or administrative capacity or whether holding a pensionable post or not, in the Engineering or any other department of any of the railways owned and administered by the President of India for the time being, OR
- (ii) being partnership firm / joint venture (JV) / registered society / registered trust etc have as one of its partners a retired Engineer of the gazetted rank or any other gazetted officer working before his retirement, OR
- (iii) being an incorporated company have any such retired Engineer of the gazetted rank or any other gazetted officer working before his retirement as one of its directors, AND

in case where such Engineer or officer had not retired from government service at least 1 year prior to the date of submission of the tender, Then the tenderer will give full information as to the date of retirement of such Engineer or gazetted officer from the said service and as to whether permission for taking such contract, or if the Contractor be a partnership firm or an incorporated company, to become a partner or director as the case may be, has been obtained by the tenderer or the Engineer or officer, as the case may be from the President of India or any officer, duly authorized by him in this behalf, shall be clearly stated in writing at the time of submitting the tender.

(b) In case, upon successful award of contract, should a tenderer depute for execution of the

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works under or to deal matters related with this contract, any retired Engineer of gazette rank or retired gazetted officer working before his retirement in the Engineering or any other department of any of the railways owned and administered by the President of India for the time being, and now in his employment, then the tenderer will ensure that retired Engineer or retired gazetted officer had retired from government service at least 1 year prior to the date of his employment with tenderer and in case he had retired from service within a year then he possesses the requisite permission from the President of India or any officer, duly authorized by him in this behalf, to get associated with the tenderer.

- (c) No retired DFCCIL employee who retired from DFCCIL minimum 365 days before tender opening date shall be on roll of Contractor on bid opening date.
- (d) Should a tenderer or Contractor being an individual, have member(s) of his family or in the case of partnership firm/ company / joint venture (JV) / registered society / registered trust etc. one or more of his partner(s)/shareholder(s) or member(s) of the family of partner(s)/shareholder(s) having share of more than 1% in the tendering entity employed in gazetted capacity in the Engineering or any other department of the DFCCIL, then the tenderer at the time of submission of tender, will inform the authority inviting tenders the details of such persons.

Note: If information as required above has not been furnished, the contract is liable to be dealt in accordance with provision of clause 62 of General Condition of Contract.

1.3.31 Participation of Joint Venture (JV) in Works

1.3.33.1 Separate identity/name shall be given to the Joint Venture.

1.3.33.2 The number of members in a JV shall not be more than three. One of the members of the JV shall be its Lead Member who shall have a majority (at least 51%) share in the JV. The authorization of the lead partner should be submitted in **Form-14**. The other members shall have a share of not less than 20% each. In case of JV with foreign member(s), the Lead Member has to be an Indian firm/company with a minimum share of 51%.

1.3.33.3 A member of JV shall not be permitted to participate either in individual capacity or as a member of another JV in the same tender.

The tender form shall be purchased and submitted only in the name of the JV and not in the name of any constituent member. The tender form can however be submitted by JV or any of its constituent member or any person authorized by JV through Power of Attorney (as per **Form -13**) to submit tender BID SECURITY shall be deposited by JV or authorized person of JV through e- payment gateway or as mentioned in tender document.

1.3.33.4 A copy of Memorandum of Understanding (MoU) in **Form -10**, duly executed by the JV members on a stamp paper, shall be submitted by the JV along with the tender. The complete details of the members of the JV, their share and responsibility in the JV etc. particularly with reference to financial, technical and other obligations shall be furnished in the MoU.

1.3.33.5 Once the tender is submitted, the MoU shall not be modified / altered / terminated during the validity of the tender. In case the tenderer fails to observe/comply with this stipulation, the full BID SECURITY shall be liable to be forfeited.

1.3.33.6 Approval for the change of constitution of JV shall be at the sole discretion of the DFCCIL. The constitution of the JV shall not be allowed to be modified after submission of the tender bid by the JV, except when modification becomes inevitable due to succession laws etc.,

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provided further that there is no change in qualification of minimum eligibility criteria by JV after change of composition. However, the Lead Member shall continue to be the Lead Member of the JV. Failure to observe this requirement would render the offer invalid.

- 1.3.33.7 Similarly, after the contract is awarded, the constitution of JV shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all Consequential penal action as per contract conditions.
- 1.3.33.8 On award of contract to a JV, a single Performance Guarantee shall be submitted by the JV as per tender conditions. All the Guarantees like Performance Guarantee, Bank Guarantee for Mobilization Advance, Machinery Advance etc. shall be accepted only in the name of the JV and no splitting of guarantees amongst the members of the JV shall be permitted.
- 1.3.33.9 On issue of Letter of Acceptance (**LOA**), the JV entity to whom the work has been awarded, with the same shareholding pattern as was declared in the MOU/JV Agreement (various items to be covered in JV agreement are as per **Form-11**) submitted along with the tender, shall be got registered before the Registrar of the Companies under 'The Companies Act - 2013' (in case of Company) or before the Registrar/Sub-Registrar under the 'The Indian Partnership Act, 1932' (in case of Partnership Firm) or under 'The LLP Act 2008' (in case of LLP). A separate PAN shall be obtained for this entity. The documents pertaining to this entity, including its PAN shall be furnished to the DFCCILs before signing the contract agreement for the work.

In case the tenderer fails to observe/comply with this stipulation within 60 days of issue of LOA, contract is liable to be terminated. In case the contract is terminated DFCCIL shall be entitled to forfeit the full amount of the Bid Security and other dues payable to the Contractor under this contract. The entity registered, in the registered documents, shall have, inter-alia, following Clauses:

- 1.3.33.10 Joint And Several Liability - Members of the entity to which the contract is awarded, shall be jointly and severally liable to DFCCIL for execution of the project in accordance with General and Special Conditions of Contract. The members of the entity shall also be liable jointly and severally for the loss, damage caused to the DFCCILs during the course of execution of the contract or due to non-execution of the contract or part thereof.
- 1.3.33.11 Duration of the Registered Entity - It shall be valid during the entire currency of the contract including the period of extension, if any and the maintenance period after the work is completed.
- 1.3.33.12 Governing Laws - The Registered Entity shall in all respect be governed by and interpreted in accordance with Indian Laws.
- 1.3.33.13 Authorized Member - Joint Venture members in the JV MoU shall authorize one of the members on behalf of the Joint Venture to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said tender/contract. All notices/correspondence with respect to the contract would be sent only to this authorized member of the JV.
- 1.3.33.14 No member of the Joint Venture shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the

DFCCIL in respect of the said tender/contract.

1.3.33.15 Documents to be enclosed by JV along with the tender:

1.3.33.16 In case one or more of the members of the JV is/are partnership firm(s), following documents shall be submitted:

- (i) A notarized copy of the Partnership Deed,
- (ii) A copy of consent letter (in **Form -12**) of all the partners or individual authorized by partnership firm, to enter into the Joint Venture Agreement on a stamp paper.
- (iii) A notarized or registered copy of Power of Attorney in favour of the individual to sign the MOU/JV Agreement on behalf of the partnership firm and create liability against the firm.

1.3.33.17 In case one or more members is/are HUF, the following documents shall be enclosed:

- (i) A copy of notarized affidavit on Stamp Paper declaring that he who is signing the affidavit on behalf of HUF is in the position of 'Karta' of Hindu Undivided Family (HUF) and he has the authority, power and consent given by other members to act on behalf of HUF.

1.3.33.18 In case one or more members of the JV is/are companies, the following documents shall be submitted:

- (i) A copy of the resolutions of the Directors of the Company, permitting the company to enter into a JV agreement.
- (ii) The copies of MOA (Memorandum of Association) / AOA (Articles of association) of the company.
- (iii) A copy of the Certificate of Incorporation.
- (iv) A copy of Authorization/copy of Power of Attorney issued by the Company (backed by the resolution of Board of Directors) in favour of the individual to sign the tender, sign MOU/JV agreement on behalf of the company and create liability against the company.

1.3.33.19 All the Members of JV shall certify that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders/contract on the date of opening of bids either in their individual capacity or as a member of the JV in which they were/are members.

1.3.33.20 All other documents in terms of explanatory notes in clause 1.3.13 Preamble & General Instruction to tenderer.

1.3.33.21 Credentials & Qualifying Criteria: Technical and financial eligibility of the JV shall be adjudged based on satisfactory fulfillment of the following criteria:

1.3.33.22 Technical Eligibility Criteria:

The technical eligibility for the work as per para 1.3.13.(i). A of Preamble & General Instruction to tenderer above, shall be satisfied by either the 'JV in its own name & style' or 'any member having min 25% share'. Each member of JV shall have technical work done credential of minimum 5 % of the cost of work i.e. each JV member must have satisfactorily executed during the last 05 (five) years, and the current year ending on the last day of month previous to the one in which tender is invited.

1.3.33.23 Financial Eligibility Criteria

The JV shall satisfy the requirement of “Financial Eligibility” mentioned at para 1.3.13.(i). B Preamble & General Instruction to tenderer. The “financial capacity” of the lead partner of JV shall not be less than 51% of the financial eligibility criteria mentioned at para 1.3.13.(i) B of Preamble & General Instruction to tenderer.

The arithmetic sum of individual “financial capacity” of all the members shall be taken as JV’s “financial capacity” to satisfy this requirement.

Note: Contractual payment received by a Member in an earlier JV shall be reckoned only to the extent of the concerned member’s share in that JV for the purpose of satisfying compliance of the above-mentioned financial eligibility criteria in the tender under consideration.

1.3.34.0 Participation of Partnership Firms in tenders:

- 1.3.34.1 The Partnership Firms participating in the tender should be legally valid under the provisions of the Indian Partnership Act.
- 1.3.34.2 The partnership firm should have been in existence or should have been formed prior to submission of tender. Partnership firm should have either been registered with the Registrar or the partnership deed should have been notarized prior to date of tender opening as per the Indian Partnership Act.
- 1.3.34.3 Separate identity / name should be given to the partnership firm. The partnership firm should have PAN/TAN number in its own name and PAN/TAN number in the name of any of the constituent partners shall not be considered. The valid constituents of the firm shall be called partners.
- 1.3.34.4 Once the tender has been submitted, the constitution of the firm shall not normally be allowed to be modified / altered / terminated during the validity of the tender as well as the currency of the contract except when modification becomes inevitable due to succession laws etc., in which case prior permission should be taken from DFCCIL and in any case the minimum eligibility criteria should not get vitiated. The re-constitution of firm in such cases should be followed by a notary certified Supplementary Deed. The approval for a change of constitution of the firm, in any case, shall be at the sole discretion of the DFCCILs and the tenderer shall have no claims what-so-ever. Any change in the constitution of the Partnership firm after opening of tender shall be with the consent of all partners and with the signatures of all partners as that in the Partnership Deed. Failure to observe this requirement shall render the offer invalid and full BID SECURITY shall be forfeited.

If any Partner/s withdraws from the firm after opening of the tender and before the award of the contract, the offer shall be rejected and BID SECURITY of the tenderer will be forfeited. If any new partner joins the firm after opening of tender but prior to award of contract, his / her credentials shall not qualify for consideration towards eligibility criteria either individually or in proportion to his share in the previous firm. In case the tenderer fails to inform DFCCIL beforehand about any such changes / modification in the constitution which is inevitable due to succession laws etc. and the contract is awarded to such firm, then it will be considered a breach of the contract conditions liable for determination of the contract under Clause 62 of General Conditions of Contract.

- 1.3.34.5 A partner of the firm shall not be permitted to participate either in his individual capacity or

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as a partner of any other firm in the same tender.

- 1.3.34.6 The tender form shall be submitted only in the name of partnership firm. The BID SECURITY shall be deposited by partnership firm through e-payment gateway or as mentioned in tender document. The BID SECURITY submitted in the name of any individual partner or in the name of authorized partner (s) shall not be considered.
- 1.3.34.7 One or more of the partners of the firm or any other person (s) shall be designated as the authorized person (s) on behalf of the firm, who will be authorized by all the partners to act on behalf of the firm through a "Power of Attorney", specially authorizing him / them to submit & sign the tender, sign the agreement, receive payment, witness measurements, sign measurement books, make correspondences, compromise / settle / relinquish any claim (s) preferred by the firm, sign "No Claim Certificate", refer all or any dispute to arbitration and to take similar such action in respect of the said tender / contract. Such "Power of Attorney" shall be notarized / registered and submitted along with the tender.
- 1.3.34.8 On issue of the Letter of Acceptance (LOA) to the partnership firm, all the guarantees like Performance Guarantee, Guarantee for various Advances to the Contractor shall be submitted only in the name of the partnership firm and no splitting of guarantees among the partners shall be acceptable.
- 1.3.34.9 On issue of the Letter of Acceptance (LOA), contract agreement with partnership firm shall be executed in the name of the firm only and not in the name of any individual partner.
- 1.3.34.10 In case the Letter of Acceptance (LOA) is issued to a partnership firm, the following undertakings shall be furnished by all the partners through a notarized affidavit, before signing of contract agreement.
- (a) Joint and several liabilities: The partners of the firm to which the Letter of Acceptance (LOA) is issued shall be jointly and severally liable to DFCCIL for execution of the contract in accordance with the General and Special Conditions of the Contract. The partners shall also be liable jointly and severally for the loss, damages caused to the DFCCIL during the course of execution of the contract or due to non-execution of the contract or part thereof.
 - (b) Duration of the partnership deed and partnership firm agreement: The partnership deed/partnership firm agreement shall normally not be modified/altered/ terminated during the currency of contract and the maintenance period after the work is completed as contemplated in the conditions of the contract. Any change carried out by partners in the constitution of the firm without the permission of DFCCIL, shall constitute a breach of the contract, liable for determination of the contract under Clause 62 of the General Conditions of Contract.
 - (c) Governing laws: The partnership firm agreement shall in all respect be governed by and interpreted in accordance with the Indian laws.
 - (d) No partner of the firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other partner/s and that of the DFCCIL.
- 1.3.34.11 The tenderer shall clearly specify that the tender is submitted on behalf of a partnership firm. The following documents shall be submitted by the partnership firm, with the tender:

- (i) A notarized copy of partnership deed.
- (ii) A notarized or registered copy of Power of Attorney in favour of the individual to tender for the work, sign the agreement etc. and create liability against the firm.
- (iii) An undertaking by all partners of the partnership firm that they are not blacklisted or debarred by Railways or any other Ministry / Department of the Govt. of India from participation in tenders / contracts as on the date of opening of bids, either in their individual capacity or in any firm in which they were / are partners. Concealment / wrong information in regard to above shall make the contract liable for determination under Clause 62 of the General Conditions of Contract.
- (iv) All other documents in terms of explanatory notes in clause 1.3.13 Preamble & General Instruction to tenderer.

1.3.34.12 Evaluation of eligibility of a partnership firm:

The technical and financial eligibility of the firm shall be adjudged based on satisfactory fulfillment of the eligibility criteria laid down in Clause 1.3.13 Preamble & General Instruction to tenderer.

1.3.35.0 Various provision of Gol policy of Public Procurement (Preference to Make in India), Order No.45021/2/2017-PP(BE-II) dated 16.09.2020 (copy enclosed as **Form-18** (MII)) shall be applicable for this tender.

1.3.36 If any Bidder or its Member is from such countries sharing a land border with India, then that bidder will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority. The Competent Authority for registration will be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT), India. For interpretation of this clause Department of Expenditure, Ministry of Finance, Government of India letter F.No.6/18/2019-PPD letter dated 23/07/2020 shall be referred.

1.3.37 **Integrity Pact:** The integrity pact duly executed and signed by the Bidder, or his Authorized Representative shall be submitted at time of Bidding. The Performa for Integrity Pact is placed as **Form – 15 (IP)**.

CHAPTER - V

GENERAL CONDITIONS OF CONTRACT

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CHAPTER - V

General Conditions of Contract

DEFINITIONS AND INTERPRETATION

1.(1). **Definition:** In these General conditions of Contract for O & M phase, the following terms shall have the meaning assigned hereunder except where the context otherwise requires:

- (a) **“DFCCIL”** shall mean the Managing Director/Dedicated Freight Corridor Corporation of India Limited or the Administrative Officers of the DFCCIL or of the Successor authorized to deal with any matter which these presents are concerned on his behalf. As per Railway Act, DFCCIL is also a Railway Administration.
- (b) **“Managing Director/ Director of DFCCIL”** shall mean the officer - in-charge of the General Superintendence and Control of the DFCCIL and shall mean and include their successors, of the successor DFCCIL and shall also include.
- (c) **“Chief General Manager/ General Manager”** shall mean the officer - in-charge of the Engineering Department of DFCCIL. and shall also include GGM of DFCCIL.
- (d) **“Executive Director”** shall mean the Officer in-charge of a DFCCIL corridor and shall also mean any officer nominated by “DFCCIL” and shall mean and include their successors of the successor DFCCIL.
- (e) **“Engineer”** and Employer’s Engineer shall mean the General Manager (Civil)/Dy. Chief Project Manager/Project (Civil) of DFCCIL/PMC appointed by DFCCIL.
- (f) **“Engineer’s Representative”** shall mean the DPM/APM /JPM./Sr. Executive/ Executive (Civil) of DFCCIL in direct charge of the work and shall mean and include the Engineer’s Representative of the PMC appointed by DFCCIL.
- (g) **“Contractor/ O & M Contractor ”** shall mean the person/Firm/ Company/JV whether incorporated or not who enters into the contract with the DFCCIL and shall include their executors, administrators, and successors and permitted assigns.
- (h) **“Contractor’s authorized engineer”** shall mean a graduate engineer having more than 3 years’ experience in the relevant field of O & M of track machines involved in the contract, duly approved by Engineer.
- (i) **“Contract/ O & M Contract”** shall mean and include the Agreement, the accepted schedule of rates for items of O & M work quantified, General Conditions of Contract, Special Conditions of Contracts Drawings, Specifications, any other tender provisions and all other documents included as part of contract.
- (j) **“Works”** shall mean the Operation and Maintenance of DFCCIL RBMV for its intended use/ works to be executed in accordance with the contract.
- (k) **“Specifications”** shall mean the Specifications for goods, materials and works referred to / mentioned in tender documents.
- (l) **“Temporary Works”** shall mean all temporary works of every kind required for the execution completion and/or maintenance of the RBMV Machine.
- (m) **“Site”** shall mean the track machine and DFCCIL track/land and other places on, under, in or

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through which the works are to be carried out and any other lands or places provided by the DFCCIL for the purpose of the Contract.

- (n) **“Bid” or “Tender”, “Bidder” or “Tenderer” or “contractor”** wherever appearing in this document shall have the same and interchangeable meaning.

- 1.(2). Singular and Plural: - Words importing the singular number shall also include the plural and vice versa where the context requires.
- 1.(3). Headings & marginal headings: -The headings and marginal headings in these general conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or the contract.

GENERAL OBLIGATION

- 2.(1). **Execution Co-relation and intent of contract Documents:** -The contract documents shall be signed in triplicate by DFCCIL and the Contractor. The contract documents are complementary, and what is called for by anyone shall be as binding as if called for by all, the intention of the documents is to include all labor and materials, equipment and transportation necessary for the proper execution of work. Materials or work not covered by or properly inferable from any heading or class of the specifications shall not be supplied by the DFCCIL to the contractors unless distinctly specified in the contract documents. Materials or works described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.
- 2.(2). If a work is transferred from the jurisdiction of one DFCCIL unit to another DFCCIL unit or to a Project Authority/DFCCIL or vice versa while contract is in subsistence, the contract shall be binding on the Contractor and the Successor DFCCIL unit/Project in the same manner & take effect all respects as if the Contractor and the Successor DFCCIL unit/Project were parties there to from the inception and the corresponding officer or the Competent Authority in the Successor DFCCIL unit/Project will exercise the same powers and enjoy the same authority as conferred to the Predecessor DFCCIL unit/Project under the original contract/agreement entered into.
- 2.(3). If for administrative or other reasons the contract is transferred to the Successor DFCCIL unit/Successor Project Authority of DFCCIL the contract shall notwithstanding any things contained herein contrary there to, be binding on the Contractor and the Successor DFCCIL unit /Project Authority/ DFCCIL in the same manner and take effect in all respect as if the Contractor and the Successor DFCCIL unit/ successor Project Authority of DFCCIL had been parties thereto from the date of this contract. The contract shall be Administered/Managed by GGM/CGM/GM/CPM/nominated by DFCCIL.
- 3.(1). **Law governing the contract:** This agreement and the relationship between the parties shall be governed construed and interpreted in accordance with applicable laws of India. Applicable laws shall mean all laws, bye-laws, statutes, rules, regulations, orders, ordinances, codes, guidelines, notices, directions, judgements, decrees or other requirements or official directives and/or of any statutory authority in the Republic of India.”
- 3.(2). **Compliance to regulations and bye-laws:-**The contractor shall conform to the provision of any statute relating to the works and regulations and by-laws of any location authority and of any water and lighting companies or undertakings, with whose system the work is proposed to be connected and shall before making any variation from the drawings or the specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reasons for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect thereof. The contractor shall be bound to give all notices required by statute, regulations or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect hereof.

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4. **Communications to be in writing:** - All notices, communications, reference and complaints made by the DFCCIL or the Engineer or the Engineer's representative or the contractor inters concerning the work shall be in writing and no notice, communication, reference or complaint not in writing shall be recognized.
5. **Service of Notices on Contractor:-**The contractor shall furnish to the Engineer the name designation and address of his authorized agent and all complaints, notices, communications and references shall be deemed to have been duly given to the contractor if delivered to the contractor or his authorized agent or left at or posted to the address so given and shall be deemed to have been so given in the case of posting on day on which they would have reached such address in the ordinary course of post or on the day on which they were so delivered or left. In the case of contract by partners, any change in the constitution of the firm shall be forthwith notified by the contractor to the Engineer.
6. **Occupation and use of land:** - No land belonging to or in the possession of the DFCCIL shall be occupied by the Contractor without the permission of the DFCCIL. The Contractor shall not use, or allow to be used, the site for any purposes other than that of executing the works. Whenever non-railway bodies / persons are permitted to use DFCCIL premises with competent authority's approval, conservancy charges as applicable from time to time may be levied.
7. **Assignment or subletting of contract:** Not applicable for this work.
8. **Assistance by the DFCCIL for the Stores to be obtained by the Contractor:** - Owing to difficulty in obtaining certain materials (including Tools & Plant) in the market, the DFCCIL may agree without any liability therefore to endeavor to obtain or assist the contractor in obtaining the required quantities of such materials as may be specified in the tender. In the event of delay or failure in obtaining the required quantities of the aforesaid material the contractor shall not be deemed absolved of his own responsibility and shall keep in touch with day to day positions regarding their availability and accordingly adjust progress of works including employment of labour and the DFCCIL shall not in any way be liable for the supply of materials or for the non-supply thereof for any reasons whatsoever nor for any loss or damage arising in consequence of such delay or no supply.
9. **Deleted**
10. **Carriage of materials:** - No forwarding orders shall be issued by the DFCCIL for the conveyance of contractor's materials, tools and plant by Rail which may be required for use in the O & M works and the contractor shall pay full freight charges at public tariff rates, therefore.
11. **Deleted**
12. **Representation on O & M works:-**The contractor shall, when he is not personally present on the site of the O & M works place and keep a responsible agent at the O & M works during working hours who shall on receiving reasonable notice, present himself to the Engineer and orders given by the Engineer or the engineer's representative to the agent shall be deemed to have the same force as if they had been given to the Contractor. Before absenting himself, the contractor shall furnish the name and address of his agent for the purpose of this clause and failure on the part of the Contractor to comply with this provision at any time will entitle the DFCCIL to rescind the contract under clause 62 of these conditions.
13. **Relics and Treasures:** -Not Applicable to this contract.
14. **Excavated material:** - Not Applicable to this contract.
15. **Indemnity by Contractors:** - The contractor shall indemnify and save harmless the DFCCIL from and against all actions, suit proceedings losses, costs, damages, charges, claims and demands of

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every nature and description brought or recovered against the DFCCIL by reason of any act or omission of the contractor, his agents or employees, in the execution of the works or in his guarding of the same. All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

16.(1) Security Deposit: The Security Deposit shall be 5% of the contract value. The Bid Security submitted by the Contractor with his tender will be retained/uncashed by the DFCCIL as part of security for the due and faithful fulfillment of the contract by the Contractor. Provided further that, if Contractor submits the Cash or Term Deposit Receipt issued from a Scheduled commercial bank of India or irrevocable Bank Guarantee Bond from a Scheduled commercial bank of India, either towards the Full Security Depositor the Part Security Deposit equal to or more than Bid Security, the DFCCIL shall return the Bid Security, to the Contractor.

Balance of Security Deposit may be deposited by the Contractor in cash or Term Deposit Receipt issued from Scheduled commercial bank of India or irrevocable Bank Guarantee bond issued from Scheduled commercial bank of India, or may be recovered at the rate of 6% of the bill amount till the full Security Deposit is recovered. Provided also that in case of defaulting Contractor, the DFCCIL may retain any amount due for payment to the Contractor on the pending "on account bills" so that the amounts so retained (including amount guaranteed through Performance Guarantee) may not exceed 10% of the total value of the contract.

The Irrevocable Bank Guarantee submitted towards Security deposit shall be initially valid up to the stipulated date of Maintenance period plus 60 days and shall be extended from time to time, depending upon extension of contract granted in terms of Clause 17A of the General Conditions of Contract.

Note: Security Deposit deposited in cash by the Contractor or recovered from the running bills of a Contractor or submitted by contractor as Term Deposit Receipt(s) can be refunded/returned to the contractor, in lieu of irrevocable Bank Guarantee bond issued from scheduled commercial bank of India, to be submitted by him, for an amount equal to or more than the already available Security Deposit, provided however that, in a contract of value less than Rs. 50 Crore, such refund/ return of the already available Security Deposit is permitted up to two times and in a contract of value equal to or more than Rs. 50 Crore, such refund / return of the already available Security Deposit is permitted up to three times.

16.(2) (i) Refund of Security Deposit: Security Deposit mentioned in sub clause (1) above shall be returned to the Contractor along with or after, the following:

- (a) Final Payment of the Contract as per clause 51.(1) **and**
- (b) Execution of Final Supplementary Agreement or Certification by Engineer that DFCCIL has No Claim on Contractor.

16.(2) (ii) Forfeiture of Security Deposit: Whenever the contract is rescinded as a whole under clause 62 (1) of these conditions, the Security Deposit already with DFCCIL under the contract shall be forfeited. However, in case the contract is rescinded in part or parts under clause 62 (1) of these conditions, the Security Deposit shall not be forfeited.

16.(3) No interest shall be payable upon the Bid Security and Security Deposit or amounts payable to the Contractor under the Contract, but Government Securities deposited in terms of Sub-Clause 16.(4)(b) of this clause will be payable with interest accrued thereon.

16.(4) Performance Guarantee

The procedure for obtaining the Performance Guarantee is outlined below:

- (a) The successful bidder shall have to submit a Performance Guarantee (PG) within 21 (Twenty-

one) days from the date of issue of Letter of Acceptance (LOA). Extension of time for submission of PG beyond 21 (Twenty-one) days and upto 60 days from the date of issue of LOA may be given by the Authority who is competent to sign the contract agreement. However, a penal interest of 12% per annum shall be charged for the delay beyond 21(Twenty-one) days, i.e. from 22nd day after the date of issue of LOA. Further, if the 60th day happens to be a declared holiday in the concerned office of the DFCCIL, submission of PG can be accepted on the next working day.

In all other cases, if the Contractor fails to submit the requisite PG even after 60 days from the date of issue of LOA, the contract is liable to be terminated. In case contract is terminated railway shall be entitled to forfeit Bid Security and other dues payable to the contractor against that particular contract, subject to maximum of PG amount. In case a tenderer has not submitted Bid Security on the strength of their registration as a Startup recognized by Department of Industrial Policy and Promotion (DIPP) under Ministry of Commerce and Industry, DIPP shall be informed to this effect.

The failed Contractor shall be debarred from participating in re-tender for that work.

- (b) The successful bidder shall submit the Performance Guarantee (PG) in any of the following forms, amounting to 5% of the original contract value:
- (i) A deposit of Cash;
 - (ii) Irrevocable Bank Guarantee;
 - (iii) Government Securities including State Loan Bonds at 5% below the market value;
 - (iv) Pay Orders and Demand Drafts tendered by any Scheduled Commercial Bank of India;
 - (v) Guarantee Bonds executed or Deposits Receipts tendered by any Scheduled Commercial Bank of India;
 - (vi) Deposit in the Post Office Saving Bank;
 - (vii) Deposit in the National Savings Certificates;
 - (viii) Twelve years National Defence Certificates;
 - (ix) Ten years Defence Deposits;
 - (x) National Defence Bonds and
 - (xi) Unit Trust Certificates at 5% below market value or at the face value whichever is less. Also, FDR in favour of FA&CAO (free from any encumbrance) may be accepted.
- (c) The Performance Guarantee shall be submitted by the successful bidder after the Letter of Acceptance (LOA) has been issued, but before signing of the contract agreement. This P.G. shall be initially valid upto the stipulated date of completion plus 60 days beyond that. In case, the time for completion of work gets extended, the Contractor shall get the validity of P.G. extended to cover such extended time for completion of work plus 60 days.
- (d) The value of PG to be submitted by the Contractor is based on original contract value and shall not change due to subsequent variation(s) in the original contract value.
- (e) The Performance Guarantee (PG) shall be released after physical completion of the work based on 'Completion Certificate' issued by the competent authority stating that the Contractor has completed the work in all respects satisfactorily.
- (f) Whenever the contract is rescinded, the Performance Guarantee already submitted for the contract shall be encased.
- (g) The Engineer shall not make a claim under the Performance Guarantee except for amounts to which

the President of India is entitled under the contract (not withstanding and/or without prejudice to any other provisions in the contract agreement) in the event of:

- (i) Failure by the Contractor to extend the validity of the Performance Guarantee as described herein above, in which event the Engineer may claim the full amount of the Performance Guarantee.
- (ii) Failure by the Contractor to pay President of India any amount due, either as agreed by the Contractor or determined under any of the Clauses/Conditions of the Agreement, within 30 days of the service of notice to this effect by Engineer.
- (iii) The Contract being determined or rescinded under clause 62 of these conditions.

17 Force Majeure Clause:- If at any time, during the continuance of this contract, the Performance in whole or in part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, acts of public enemy, civil commotion, sabotage, serious loss or damage by fire, explosions, epidemics, strikes, lockouts or act of God (hereinafter, referred to events) provided, notice of the happening of any such event is given by either party to the other within 30 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance, and works under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Engineer as to whether the works have been so resumed or not shall be final and conclusive, PROVIDED FURTHER that if the performance in whole or in part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 120 days, either party may at its option terminate the contract by giving notice (notice period of 60 days) to the other party.

17-A. **Extension of time in Contracts:** If required extension of time of O & M contract may be given if both parties agree for the same at original terms and condition of contract and at original rates.

17-B. **Deleted.**

17-C. **Bonus for Early Completion of Work:** Not applicable to this contract.

18.(1). **Illegal Gratification:-** Any bribe, commission, gift or advantage given, promised or offered by or on behalf to the contractor or his partner, agent or servant or, anyone on his behalf, to any officer or employee of the DFCCIL, or to any person on his behalf in relation to obtaining or execution of this or any other contract with the DFCCIL shall, in addition to any criminal liability which he may incur, subject contractor to the rescission of the contract and all other contracts with the DFCCIL and to the payment of any loss or damage resulting from such decision and the DFCCIL shall be entitled to deduct the amounts so payable from any moneys due to the Contractor(s) under this contract or any other contracts with the DFCCIL.

18.(2). The contractor shall not lend or borrow from or have or enter into any monetary dealings and transactions either directly or indirectly with any employee of DFCCIL and if he shall do so, DFCCIL shall be entitled forthwith to rescind the contract and all other contracts with DFCCIL. Any question or dispute as to the commission or any such offence or compensation payable to the DFCCIL under this clause shall be settled by the GGM/GM /CGM of the DFCCIL, in such a manner as he shall consider fit and sufficient and his decision shall be final and conclusive. In the event of rescission of the contract under this clause, the contractor will not be paid any compensation whatsoever except payments for the work done up to the date of rescission.

EXECUTION OF WORKS

19.(1). **Contractor's understanding:-** It is understood and agreed that the contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of the materials to be encountered, the character of

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equipment and facilities needed preliminary to and during the progress of the works, the general and local conditions, the labour conditions prevailing therein and all other matters which can in any way affect the works under the contract.

- 19 (2) Commencement of works:** The contractor shall commence the works within 15 days from the date of issue of Letter of Acceptance (LOA) in writing to this effect from the Engineer and shall proceed with the same with due expedition and without delay.
- 19.(2). **Setting out of works:** Not applicable for this tender.
- 20.(1). **Compliance to Engineer's instructions:** -The Engineer shall direct the order in which the several parts of the works shall be executed, and the contractor shall execute without delay all orders given by the Engineer from time to time but the contractor shall not be relieved thereby from responsibility for the due performance of the works in all respects.
- 20.(2). **Alterations to be authorized:** No alterations in or additions to or omissions or abandonment of any part of the works shall be deemed authorized, except under instructions from the Engineer, and the contractor shall be responsible to obtain such instructions in each and every case in writing from the Engineer.
- 20.(3). **Extra works:** Any works over and above those included in the contract require to be executed, the contractor shall have no right to be entrusted with the execution of such works which may be carried out by another contractor or contractors or by other means at the option of the DFCCIL.
- 20.(4). **Separate contracts in connection with works:** The DFCCIL shall have the right to let other contracts in connection with the works. The contractor shall afford other contractors' reasonable opportunity for the storage of their materials and the execution of their works and shall properly connect and coordinate his work with theirs. If any part of the contractor's work depends for proper execution or result upon the work of another contractor(s), the contractor shall inspect and promptly report to the Engineer any defects in such works that render it unsuitable for such proper execution and results. The contractor's failure so-to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other contractor's work after the execution of his work.
21. **Instructions of Engineer's Representative:** - Any instructions or approval given by the Engineer's representative to contractor in connection with the works shall bind the contractor as though it had been given by the Engineer provided always as follows:
- a. Failure of the Engineer's representative to disapprove any work or materials shall not prejudice, the power of the Engineer thereafter to disapprove such work or material and to order the removal or breaking up thereof.
 - b. If the Contractor shall be dissatisfied by reason of any decision of the Engineer's representative, he shall be entitled to refer the matter to the Engineer who shall there upon confirm or vary such decision.
- 22.(1) **Adherence to specifications:** - The whole of the work shall be executed in perfect conformity with the specifications of the contract. If the contractor performs any work in a manner contrary to the specifications and without such reference to the Engineer, he shall bear all the costs arising or ensuing therefore and shall be responsible for all loss to the DFCCIL.
- 22.(2) **Specifications of the works:** - The contractor shall keep one copy of the Contract Agreement/ specifications at the site, in good order, and such contract documents as may be necessary available to the Engineer or the Engineer's representative.
- 22.(3) **Ownership of specifications:** - All specifications and copies thereof furnished by the DFCCIL to the Contractor are deemed to be the property of DFCCIL. They shall not be used on other works

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and with the exception of the signed contract set, shall be returned by the contractor to DFCCIL on completion of the work or termination of the contract.

- 22.(4) **Compliance with Contractor's request for details:** - The Engineer shall furnish with reasonable promptness, after receipt by him of the contractor's request for the same, additional instructions, necessary for the proper execution of the works or any part thereof. All such instructions shall be consistent with the contract Documents and reasonably inferable there from.
- 22.(5) **Meaning and intent of specification:-** If any ambiguity arises as to the meaning and intent of any portion of the specifications or as to execution or quality of any work or material, or as to the measurements of the works the decision of the Engineer thereon shall be final subject to the appeal (within 7 days of such decision being intimated to the contractor) to the CGM/GM who shall have the power to correct any errors, omissions, or discrepancies in aforementioned items and whose decision in the matter in dispute or doubt shall be final and conclusive.
23. **Working during night:** The Contractor have to arrange lightning arrangement for night working of track machines.
24. **Damage to DFCCIL property or private life and property:** The contractor shall be responsible for all risk to the work and for trespass and shall make good at his own expense all loss or damage whether to the works themselves or to any other property of the DFCCIL or the lives, persons or property of others from whatsoever cause in connection with the works and this although all reasonable and proper precautions may have been taken by the contractor, and in case the DFCCIL shall be called upon to make good any costs, loss or damages, or to pay an compensation, including that payable under the provisions of the Workmen's Compensation Act or any statutory amendments thereof to any person or persons sustaining damages as aforesaid by reason of any act, or any negligence or omissions on the part of the contractor the amount of any costs or charges including costs and charges in connection with legal proceedings, which the DFCCIL may incur in reference thereto, shall be charged to the contractor. The DFCCIL shall have the power and right to pay or to defend or compromise any claim of threatened legal proceedings or in anticipation of legal proceedings being instituted consequent on the action or default of the contractor, to take such steps as may be considered necessary or desirable to ward off or mitigate the effect of such proceedings, charging to contractor, as aforesaid any sum or sums of money which may be paid and any expenses whether for reinstatement or otherwise which may be incurred and the propriety of any such payment, defence or compromise, and the incurring of any such expenses shall not be called in question by the contractor.
25. **Sheds, stores houses and Yards:-**The DFCCIL shall at his own expense provide sheds, stores houses in such situations and in such numbers as in the opinion of the Engineer is requisite for carrying on the works and the contractor shall keep at each such sheds, stores houses a sufficient quantity of materials and plant in stock as not to delay the carrying out of the works with due expedition and the Engineer and the Engineer's representative shall have free access to the said sheds, store houses at any time for the purpose of inspecting the stock of materials or plant so kept in hand, and any materials or plan which the Engineer may object to shall not be brought upon or used in the works, but shall be forthwith removed from the sheds, store houses or yards by the contractor. The contractor shall at his own expense provide and maintain all T & P or any other equipment necessary for the execution of the works.
26. **Provision of efficient and competent Staff at work sites by the Contractor:**
- 26.1. The contractor shall place and keep on the works at all times efficient and competent staff to give the necessary direction to his workmen and to see that they execute their work in sound and proper manner and shall employ only such supervisors, Operators, Technicians and Helpers/labourers in or about the execution of any of these works as are careful and skilled in the various trades.
- 26.2. The contractor shall at once remove from the works any agents, permitted sub-contractor, supervisors, Operators, Technicians and Helpers/labourers who shall be objected to by the Engineer

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and if and whenever required by the Engineer, he shall submit a correct return showing the names of all staff and workmen employed by him.

26.3. For detail of manpower refer clause 1.14 and 1.15 of SCC (Chapter-VI).

26A Deployment of Qualified Engineers at Sites by the Contractor: As per provisions of SCC.

27.(1). **Workmanship and testing:-** The whole of the works and / or supply of materials specified and provided in the contract or that may be necessary to be works done in order to form and complete any part thereof shall be executed in the best and most substantial workman like manner with materials of the best and most approved quality of their respective kinds, agreeable to the particulars contained in or implied by the specifications and as referred to in and represented by the drawings or in such other additional particulars, instructions and drawings may be found requisite to be given during the carrying on of the works and to the entire satisfaction of the Engineer according to the instructions and directions which the contractors may from time to time receive from the Engineer. The work may be subjected to tests by means of such machines, instruments and appliances as the Engineer may direct and wholly at the expense of the contractor.

27.(2). **Removal of materials & Correction in bad work: -** The Engineer or the Engineer's Representative shall be entitled to order from time to time:

- (a) The removal from the site, within the time specified in the order, of any materials or spare parts which in his opinion are not in accordance with the specifications.
- (b) The substitution of proper and suitable materials, and
- (c) the proper re-supply, notwithstanding any previous tests thereof or on account payments therefore, of any work which in respect of materials or workmanship is not in his opinion in accordance with the specifications and in case of default on the part of the Contractor in carrying out such order, the DFCCIL shall be entitled to rescind the contract under Clause 62 of these conditions.

28. **Facilities for inspection:-** The contractor shall afford the Engineer and the Engineer's Representative every facility for entering in and upon every portion of the work/store at all hours for the purpose of inspection or otherwise and shall provide all labour, materials, appliances and things of every kind required for the purpose and the Engineer and the Engineer's Representative shall at all times have free access to every part of the works/store and to all places at which materials for the works are stored or being prepared.

29. **Examination of work before covering up:-** Not Applicable to this tender.

30. **Temporary Works:** Not Applicable to this tender.

31.(1). Water required for O & M of RBMV shall be provided free of cost.

31.(2). **Deleted**

31.(3). **Deleted**

31.(4). If Electric power is required for O & M of RBMV, it shall be provided free of cost.

32. **Property in materials and plants:** Not Applicable to this tender.

33.(1). **Tools, Plant and Materials Supplied by DFCCIL:** Provision of O & M of RBMV as detailed in SCC of this O & M Contract has to be adhered by O & M Contractor without fail.

33.(2). **Hire of DFCCIL's Plant:** Not Applicable to this tender.

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- 34.(1). Precaution during the progress of works:** During the execution of works, contractors shall take all precautions to avoid any damage, injury or loss is caused or likely to be caused to any person, property or railway system of DFCCIL. For details refer clause 1.16 and 1.24 of SCC (Chapter-VI).
- 34.(2). Road and Water courses:** Not Applicable to this tender.
- 34.(3). Provision of access to premises:** Not Applicable to this tender.
- 34.(4). Safety of Public:** The Contractor shall be responsible to take all precautions to ensure the safety of the public whether on public or DFCCIL property and shall post such look out men as may in the opinion of the Engineer be required to comply with regulations pertaining to the work.
- 35. Deleted.**
- 36.(1). Suspension of works:** The Contractor shall on the order of the Engineer, suspend the progress of the works or any part thereof for such time or times and in such manner as the Engineer may consider necessary and shall during such suspension properly protect and secure the work so far as is necessary in the opinion of the Engineer. If such suspension is:
- (a) Provided for in the contract, or
 - (b) Necessary for the proper execution of the works or by the reason of weather conditions or by some default on the part of the Contractor, and/or
 - (c) Necessary for the safety of the works or any part thereof.
- 36.(2).** The Contractor shall not be entitled to the extra costs, if any, incurred by him during the period of suspension of the works.
- 36.(3). Suspension lasting more than 3 months:-** If the progress of the works or any part thereof is suspended on the order of the Engineer for more than three months at a time, the Contractor may serve a written notice on the Engineer requiring permission within 15 days from the receipt thereof to proceed with the works or that part thereof in regard to which progress is suspended and if such permission is not granted within that time the Contractor by further written notice so served may, but is not bound to, elect to treat the suspension where it affects part only of the works as an omission of such part or where it affects the whole of the works, as an abandonment of the contract by the DFCCIL.
- 37. Rates for items of works:-** The rates, entered in the accepted Schedule of Rates of the Contract are intended to provide for works duly and properly completed in accordance with the general and special (if any) conditions of the contract, and the specifications and drawings together with such enlargements, extensions, diminutions, reductions, alterations or additions as may be ordered in terms of Clause 42 of these conditions and without prejudice to the generality thereof and shall be deemed to include and cover superintendence and labour, supply, including full freight, of materials, stores, tools and all apparatus and plant required on the works, except such tools, plant or materials as may be specified in the contract to be supplied to the Contractor by the DFCCIL, the erection, maintenance and removal of all temporary works and, all watching, lighting, all prevention of or compensation for trespass, all barriers and arrangements for the safety of the public or of employees during the execution of works, all sanitary and medical arrangements for labour camps as may be prescribed by the DFCCIL, the setting of all work, site clearance, all fees duties, royalties, rent and compensation to owners for surface damage or taxes and impositions payable to local authorities in respect of land, structures and all material supplied for the work or other duties of expenses for which the Contractor may become liable or may be put to under any provision of law for the purpose of or in connection with the execution of the contract, and all such other incidental charges or contingencies as may have been specially provided for in the specifications.
- 38. Deleted**
- 39.(1). Rates for extra items of works:**

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- (a) the rate shall be decided as agreed upon between the Engineer and the Contractor before the execution of such items of O & M Contract work as per sub clause (b).
- (b) For any item of work to be carried out by the Contractor but not included in the accepted SOR the Contractor shall be bound to notify the Engineer at least seven days before the necessity arises for the execution of such items of work that the accepted SOR does not include rate or rates for such extra work involved. The rates payable for such items shall be decided at the meeting to be held between the Engineer and Contractor, in as short a period as possible after the need for the special item has come to notice. In case the Contractor fails to attend the meeting after being notified to do so or in the event of no settlement being arrived at, the DFCCIL shall be entitled to execute the extra works by other means and the Contractor shall have no claim for loss or damage that may result from such procedure. The assessment of rates for extra item(s) shall be arrived at based on the prevailing market rates of labour, machinery & materials and on basis of Market Analysis.

39.(2). Provided that if the Contractor commences work or incurs any expenditure in regard thereto before the rates as determined and agreed upon as lastly hereunto fore-mentioned, then and in such a case the Contractor shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of determination of rates as aforesaid according to the rates as shall be fixed by the Engineer. However, if the Contractor is not satisfied with the decision of the Engineer in this respect he may appeal to the CPM/General Manager within 30 days of getting the decision of the Engineer, supported by analysis of the rates claimed. The CGM/CPM's/ General Manager's decision after hearing both the parties in the matter would be final and binding on the Contractor and the DFCCIL.

40.(1). Handing over of work: On completion of block for track machine working, the Contractor shall be bound to hand over the track in safe condition for normal speed for running of trains. In case after examining the completed, if Contractor found that track is not fit for normal sectional speed, then he should suggest the speed restriction to be imposed for passing DFCCIL trains on track in writing to DFCCIL official present during the block. The decision of Engineer for about track fitness after block working shall be final and binding on contractor. In case rail traffic is not allowed at sectional speed due to contractor default, then for that day the contractor will not get any payment and it will be considered that the machine is not available for working on that day.

40.(2). Clearance of site on completion: On completion of O & M Contract works, the Contractor shall clear away and remove from the site all plant, surplus materials and temporary works of every kind and leave the whole of the site and works clean and in a workman like condition to the satisfaction of the Engineer. No final payment in settlement of the accounts for the works shall be paid, held to be due or shall be made to the, Contractor till, in addition to any other condition necessary for final payment, site clearance shall have been effected by him, and such clearance may be made by the Engineer at the expense of the **Contractor** in the event of his failure to comply with this provision within 7 days after receiving notice to that effect. Should it become necessary for the Engineer to have the site cleared at the expenses of the Contractor, the DFCCIL shall not be held liable for any loss or damage to such of the Contractor's property as may be on the site and due to such removal there from which removal may be effected by means of public sales of such materials and property or in such a way as deemed fit and convenient to the Engineer. The detailed provisions are given in clause 1.22.2 of SCC (Chapter VI).

VARIATIONS IN EXTENT OF CONTRACT

41. Modification to contract to be in writing: - In the event of any of the provisions of the contract requiring to be modified after the contract documents have been signed, the modifications shall be made in writing and signed by the DFCCIL, and the Contractor and no work shall proceed under such modifications until this has been done. Any verbal or written arrangement abandoning, modifying, extending, reducing or supplementing the contract or any of the terms thereof shall be deemed conditional and shall not be binding on the DFCCIL unless and until the same is incorporated

in a formal instrument and signed by the Contractor, and till then the DFCCIL shall have the right to repudiate such arrangements.

- 42.(1). Powers of modification to contract:** - The Engineer on behalf of the DFCCIL shall be entitled by order in writing to make any alterations in the method of their execution or in the combination and use of materials for the execution thereof or to order any additional work to be done or any works not to be done and the contractor will not be entitled, to any compensation for any increase/reduction in the quantities of work.
- 42.(2).** Unless otherwise specified in the contract, the accepted variation in quantity of Item No. 1 of Schedule A of SOR of the contract would be up to 25% of the quantity originally contracted. The contractor shall be bound to carry out the work at the agreed rates and shall not be entitled to any claim or any compensation whatsoever up to the limit of 25% variation in quantity of individual item.
- 42.(3). Valuation of variations:-** The enlargements, extensions, diminution, reduction, alterations or additions referred to in sub-clause (2) of this clause shall in no degree affect the validity of the contract but shall be performed by the Contractor as provided therein and be subject to the same conditions, stipulations and obligations as if they had been originally and expressly included and provided for in the specifications and drawings and the amounts to be paid therefore shall be calculated in accordance with the accepted schedule of rates. Any extra items / quantities of work falling outside the purview of the provisions of sub-clause (2) above shall be paid for at the rates determined under clause-39 of these conditions.
- 42.(4). Variations In Quantities During Execution of Works:** - Individual items in contracts (**except item of Schedule A of SOR**) can be operated with variation of plus or minus 25% and payment would be made as per the agreement rate. In case an increase in quantity of an individual item by more than 25% of the agreement quantity is considered unavoidable, the same shall be got executed by floating a fresh tender. If floating a fresh tender for operating that item is considered not practicable, the quantity of that item may be operated in excess of 125% of the agreement quantity after finalizing the rates mutually by both parties.

CLAIMS

- 43.(1). Monthly Statement of Claims:-** The Contractor shall prepare and furnish to the Engineer once in every month an account giving full and detailed particulars of all claims for any additional expenses to which the Contractor may consider himself entitled to and of all extra or additional works ordered by the Engineer which he has executed during the preceding month and no claim for payment for and such work will be considered which has not been included in such particulars.
- 43.(2). Signing of “No Claim” Certificate:-** The Contractor shall not be entitled to make any claim whatsoever against the DFCCIL under or by virtue of or arising out of this contract, nor shall the DFCCIL entertain or consider any such claim, if made by the Contractor, after he shall have signed a “No Claim” Certificate in favour of the DFCCIL in such form as shall be required by the DFCCIL after the works are finally measured up. The contractor shall be debarred from disputing the correctness of the items covered by “No Claim” Certificate or demanding a clearance to arbitration in respect thereof.

MEASUREMENTS, CERTIFICATES AND PAYMENTS

- 44. Quantities in schedule annexed to Contract:** The quantities set out in the accepted schedule of rates with items of work quantified are the estimated quantities of the work to be executed by the Contractor in fulfilment of his obligations under the contract.
- 45.(i). Measurement of works by DFCCIL:** The Contractor shall be paid for the works at the rates in the accepted schedule of rates and for extra works at rates determined under Clause 39 of these conditions on the measurements taken by the Engineer or the Engineer's representative in

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accordance with the rules prescribed for the purpose by the DFCCIL. The date and time on which "on account" or final measurements are to be made shall be communicated to the Contractor who shall be present at the site and shall sign the results of the measurements (which shall also be signed by the Engineer or the Engineer's representative) recorded in the official measurements book as an acknowledgement of his acceptance of the accuracy of the measures. Failing the Contractor's attendance, the work may be measured up in his absence and such measurements shall, notwithstanding such absence, be binding upon the Contractor whether or not he shall have signed the measurement books provided always that any objection made by him to measurement shall be duly investigated and considered in the manner set out below:

(a) It shall be opened to the Contractor to take specific objection to any recorded measurements or Classification on any ground within seven days of the date of such measurements. Any re-measurement taken by the engineer or the Engineer's representative in the presence of the Contractor or in his absence after due notice has been given to him in consequence of objection made by the Contractor shall be final and binding on the Contractor and no claim whatsoever shall thereafter be entertained regarding the accuracy and classification of the measurements.

(b) If an objection raised by the Contractor is found by the Engineer to be incorrect the Contractor shall be liable to pay the actual expenses incurred in measurements.

45.(ii). **Measurement of works by Contractor's Authorized Representative:** Not Applicable to this tender.

46.(1). **"On-Account" Payments:** - The Contractor shall be entitled to be paid from time to time by way of "On-Account" payment only for such works as in the opinion of the Engineer he has executed in terms of the contract. All payments due on the Engineer's or the Engineer's representative's certificates of measurements shall be subject to any deductions which may be made under the contract provisions.

46.(2). **Rounding off amounts:** - The total amount due on each certificate shall be rounded off to the nearest rupee i.e. sum less than 50 paise shall be omitted and sums of 50 paise and more upto Re. 1/- will be reckoned as Re. 1/-

46.(3). **On Account Payments not prejudicial to final settlement:** - "On-Account" payments made to the Contractor shall be without prejudice to the final making up of the accounts (except where measurements are specifically noted in the Measurement Book as "Final Measurements" and as such have been signed by the Contractor and Engineer's/Engineer's Representative) and shall in no respect be considered or used as evidence of any facts stated in or to be inferred from such accounts nor of any particular quantity of work having been executed nor of the manner of its execution being satisfactory.

46.(4). **Advances to the Contractor:** Not applicable to this contract.

46.(5). **Manner of payment:** Unless otherwise specified payments to the Contractor will be made by RTGS/NEFT only.

46.A PRICE VARIATION CLAUSE.

46A.1 **Applicability:** Price Variation Clause (PVC) shall be applicable in this contract. The following shall be outside the purview of price adjustments (i.e. shall be excluded from the gross value of the work for the purpose of price variation).

- a) Materials supplied by DFCCIL to the Contractors, either free or at fixed rate.
- b) Any extra item(s) included in subsequent variation falling outside the purview of the Bill(s) of Quantities of tender, under clause 39 of these General Conditions, unless applicability of

PVC and 'Base Month' has been specially agreed, while fixing the rates of such extra item(s).

46A.2 Base month: The Base Month for 'Price Variation Clause' shall be taken as the one month prior to closing of tender, unless otherwise stated elsewhere. The quarter for applicability of PVC shall commence from the month following the Base month. The Price Variation shall be based on the average Price Index of the quarter under consideration.

46A.3 Validity: Rates accepted by DFCCIL shall hold good till completion of work and no additional individual claim shall be admissible except:

- (a) Payment/recovery for net increase/decrease in GST on works contract or imposition/removal of any tax/cess on Works Contract as per Clause 37 (subjected to passing on the additional input credit to DFCCIL),

46A.4 Adjustment for variation in prices of fuel, materials and manpower items shall be determined in the manner prescribed hereunder.

46A.5 Components of various items in a contract on which variation in prices be admissible shall be fuel, materials and manpower items. However, for fixed components, no price variation shall be admissible.

46A.6 Deleted

46A.7 The formula for price variation for various items of O & M work for:

- i) All items of Schedule A of Form 4 the PVC will be calculated with following Formula:

$$P = P_o / 100 \{15 + 85 \times (B1/B2)\}$$

Whereas

P = Escalated/De-escalated Price of item
Po = Original accepted rate of SOR item

B1 = Consumer Price Index Number for Industrial Workers for Delhi (National Capital Region) as per presently Table No. 112/6/2013-CPI for Industrial Workers (Base: 2016=100) published by Government of India, Ministry of Labour & Employment, Labour Bureau for the average price index of the 3 months of the quarter under consideration

B2 = Consumer Price Index Number for Industrial Workers Delhi (National Capital Region) as per presently Table No. 112/6/2013-CPI for Industrial Workers (Base: 2016=100) published by Government of India, Ministry of Labour & Employment, Labour Bureau for the Base month.

- ii) All items of Schedule B of Form 4, the PVC will be calculated with following Formula:

$$P = P_o / 100 \{15 + 85 \times (W1/W2)\}$$

Whereas

P = Escalated/De-escalated Price of item
Po= Original accepted rate of SOR item

W1 = Average of (3 months of the quarter under consideration) of accepted cost escalation index.

W2 = Accepted cost escalation index of the Base month.

46A.8 The demands for escalation of cost shall be allowed on the basis of provisional indices as mentioned above in Clause 46A.7. Any adjustment needed to be done based on the finally published indices shall be made as and when they become available.

Special Note:

- (1) It is clearly indicated that price variation implies both an increase as well decrease in input prices and therefore price variation during the currency of the contract may result in extra payment or recovery as the case may be.
- (2) General Conditions of Contract shall be applicable in context of Price variation. However, the decision of Engineer shall be final & finding, in case of any conflict.

46A.9: Deleted

46A.10 Price Variation During Extended Period of Contract

The price adjustment as worked out above, i.e. either increase or decrease shall be applicable upto the stipulated date of completion of work including the extended period of completion.

- 47. Maintenance of works:** Not applicable for this work.
- 48.(1). Certificate of completion of works:** As soon as in the opinion of the Engineer, the works has been completed, the Engineer shall issue a certificate of completion duly indicating the date of completion in respect.
- 48.(2). Contractor not absolved by completion Certificate:** Not applicable for this contract. .
- 49. Approval only by maintenance Certificate:** Not applicable for this contract.
- 50.(1). Maintenance Certificate:** Not applicable for this contract.
- 50.(2). Cessation of DFCCIL Liability:** The DFCCIL shall not be liable to the Contractor for any matter arising out of or in connection with the contract of the execution of the works unless the contractor shall have made a claim in writing in respect thereof before the passing of final bill..
- 51.(1). Final Payment:** On the Engineer's certificate of completion in respect of the works, adjustment shall be made and the balance of account based on the Engineer or the Engineer's representative's certified measurements of the total quantity of work executed by the contractor upto the date of completion and on the accepted schedule or rates and for extra works on rates determined under Clause 39 of these conditions shall be paid to the Contractor subject always to any deduction which may be made under these presents and further subject to the Contractor having delivered to the Engineer either a full account in detail of all claims he may have on the DFCCIL in respect of the works or having delivered "No Claim Certificate" and the Engineer having after the receipt of such account given a certificate in writing that such claims are not covered under excepted matter i.e.

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Clauses 7(j), 8, 18, 22(5), 39.1, 39.2, 40A, 43(2), 45(i)(a), 55, 55-A(5), 57, 57A, 61(1), 61(2) and 62(1), 63(iv) and 63.2.11 of the Standard General Conditions of Contract or in any Clause (stated as excepted matter) of the Special Conditions of the Contract of O & M Phase, that the whole of the works to be done under the provisions of the Contracts have been completed, that they have been inspected by him since their completion and found to be in good and substantial order, that all properties, works and things, removed, disturbed or injured in consequence of the works have been properly replaced and made good and all expenses and demands incurred by or made upon the DFCCIL for or in the respect of damage or loss by from or in consequence of the works, have been satisfied agreeably and in conformity with the contract.

51.(2). Post Payment Audit:- It is an agreed term of contract that the DFCCIL reserves to itself the right to carry out a post-payment audit and or technical examination of the works and the final bill including all supporting vouchers, abstracts etc. and to make a claim on the contractor for the refund any excess amount paid to him if as a result of such examination any over-payment to him is discovered to have made in respect of any works done or alleged to have been done by him under the contract.

51.A Production of vouchers etc. by the Contractor:

- (i) For a contract of more than one crore of rupees, the contractor shall, whenever required, produce or cause to be produced for examination by the Engineer any quotation, invoice, cost or other account, book of accounts, voucher, receipt, letter, memorandum, paper of writing or any copy of or extract from any such document and also furnish information and returns verified in such manner as may be required in any way relating to the execution of this contract or relevant for verifying or ascertaining cost of execution of this contract (the decision of the engineer on the question of relevancy of any documents, information or return being final and binding in the parties). The contractor shall similarly produce vouchers; etc., if required to prove to the Engineer, that materials supplied by him, are in accordance with the specifications laid down in the contract.
- (ii) If any portion of the work in a contract of value more than one crore of rupees be carried out by a sub-contractor or any subsidiary or allied firm or company (as per Clause 7 of the General Conditions of Contract), the Engineer shall have power to secure the books of such sub-contractor or any subsidiary or allied firm or company, through the contractor, and such books shall be open to his inspection.
- (iii) The obligations imposed by sub clause (i) & (ii) above is without prejudice to the obligations of the contractor under any statute rules or orders binding on the contractor.

52. Withholding and lien in respect of sums claimed:- Whenever any claim or claims for payment of a sum of money arises out of or under the contract against the contractor, the DFCCIL shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the security, if any, deposited by the contractor and for the purpose aforesaid, the DFCCIL shall be entitled to withhold the security if any, furnished as the case may be and also have a lien over deposit or the security if any, furnished as the case may be and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the contractor, the DFCCIL shall be entitled to withhold and have a lien to the extent of the such claimed amount or amounts referred to supra, from any sum or sums found payable or which at any time thereafter may become payable to the contractor under the same contract or any other contract with this or any other DFCCIL or any Department of the Central Government pending finalization or adjudication of any such claim

It is an agreed term of the contract that the sum of money or moneys so withheld or retained under the lien referred to above, by the DFCCIL will be kept withheld or retained as such by the DFCCIL till the claim arising out of or under the contract is determined by the arbitrator (if the contract governed by the arbitration clause) or by the competent court as the case may be and that the contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to supra and duly notified as such to the contractor. For the purpose of this clause, where the contractor is a partnership firm

or a limited company, the DFCCIL shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/limited company, as the case may be whether in his individual capacity or otherwise.

52.A Lien in respect of claims in Other Contracts:

- (i) Any sum of money due and payable to the contractor (including the PG returnable to him) under the contract may be withheld or retained by way of lien by the DFCCIL, against any claim of this or any other DFCCIL or any other Department of the Central Government in respect of a payment of a sum of money arising out of or under any other contract made by the contractor with this or any other Department of the Central Government.
- (ii) However, recovery of claims of DFCCIL in regard to terminated contracts may be made from the Final Bills and Performance Guarantees of other contract or contracts, executed by the contractor. The Performance Guarantees submitted by the Contractor against other contracts, if required, may be withheld and encashed. In addition, 10% of each subsequent 'on-account bill' may be withheld, if required, for recovery of DFCCIL's dues against the terminated contract.
- (iii) It is an agreed term of the contract that the sum of money so withheld or retained under this clause by the DFCCIL will be kept withheld or retained as such by the DFCCIL till the claim arising out of or under any other contract is either mutually settled or determined by arbitration, if the other contract is governed by arbitration clause or by the competent court as the case may be and contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this clause and duly notified as such to the contractor.

- 53. Signature on Receipts for Amounts:** Every receipt for money which may become payable or for any security which may become transferable to the Contractors under these presents, shall, if signed in the partnership name by anyone of the partners of a Contractor's firm be a good and sufficient discharge to the DFCCIL in respect of the moneys or security purported to be acknowledged thereby and in the event of death of any of the Contractor, partners during the pendency of the contract it is hereby expressly agreed that every receipt by anyone of the surviving Contractor partners shall if so signed as aforesaid be good a sufficient discharge as aforesaid provided that nothing in this clause contained shall be deemed to prejudice or effect any claim which the DFCCIL may hereafter have against the legal representative of any contractor partner so dying for or in respect to any breach of any of the conditions of the contract, provided also that nothing in this clause contained shall be deemed to prejudice or effect the respective rights or obligations of the Contractor partners and of the legal representatives of any deceased Contractor partners interse.

LABOUR

- 54. Wages to Labour :-** The Contractor shall be responsible to ensure compliance with the provision of the Minimum Wages Act, 1948 (hereinafter referred to as the "said Act" and the Rules made there under in respect of any referred to as the "said Act" and the Rules made there under in respect of any employees directly or through petty contractors or subcontractors employed by him. If, in compliance with the terms of the contract, the Contractor supplied any labour to be used wholly or partly under the direct orders and control of the DFCCIL whether in connection with any work being executed by the Contractor or otherwise for the purpose of the DFCCIL such labour shall, for the purpose of this clause, still be deemed to be persons employed by the Contractor.

If any moneys shall, as a result of any claim or application made under the said Act be directed to be paid by the DFCCIL, such money shall be deemed to be moneys paid by it as aforesaid within seven days after the same shall have been demanded, the DFCCIL shall be entitled to recover the same from any moneys due or accruing to the Contractor under this or any other Contract with the DFCCIL.

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54.A Apprentices Act: The Contractor shall be responsible to ensure compliance with the provisions of the Apprentices Act, 1961 and the Rules and Orders issued there under from time to time in respect of apprentices directly or through petty contractors or sub-contractors employed by him for the purpose of carrying out the Contract.

If the contractor directly or through petty contractors or sub-contractors fails to do so, his failure will be a breach of the contract and the DFCCIL may, in its discretion, rescind the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation of the provisions of the Act.

Note: The contractors are required to engage apprentices when the work undertaken by them last for a period of one year or more and / the cost of works is rupees one lakh or more.

55 Provisions of payments of Wages Act: The Contractor shall comply with the provisions of the Payment of Wages Act, 1936 and the rules made there under in respect of all employees directly or through petty contractors or sub-contractors employed by him in the works. If In compliance with the terms of the contract, the Contractor directly or through petty contractors of sub-contractors shall supply any labour to be used wholly or partly under the direct orders and control of the Engineer whether in connection with the works to be the less be deemed to comprise persons employed by the contractor and any moneys which may be ordered to be paid by the Engineer shall be deemed to be moneys payable by the Engineer on behalf of the Contractor and the Engineer may on failure of the contractor to repay such money to the DFCCIL deduct the same from moneys due to contractor in the terms of contract. The DFCCIL shall be entitled to deduct from any moneys due to the contractor (whether under this contract or any other contract) all moneys paid or payable by the DFCCIL by the way of compensation of aforesaid or for costs of expenses in connection with any claim thereto and the decision of the Engineer upon any question arising out of the effect or force of this clause shall be final and binding upon the Contractor.

55.A Provisions of Contract labour (Regulation and Abolition) Act, 1970:

55.A(1). The contractor shall comply with the provision of the contract labour (Regulation and Abolition) Act, 1970 and the Contract labour (Regulation and Abolition) Central Rules 1971 as modified from time to time, wherever applicable and shall also indemnify the DFCCIL from and against any claims under the aforesaid Act and the Rules.

55.A(2). The Contractor shall obtain a valid license under the aforesaid Act as modified from time to time before the commencement of the work and continue to have a valid licence until the completion of the work. Any failure to fulfill the requirement shall attract the penal provision of the Contract arising out of the resultant non-execution of the work.

55.A(3). The Contractor shall pay to the labour employed by him directly or through subcontractors the wages as per provision of the aforesaid Act and the Rules wherever applicable. The Contractor shall notwithstanding the provisions of the contract to the contrary, cause to be paid the wages to labour indirectly engaged on the works including any engaged by subcontractors in connection with the said work, as if the labour had been immediately employed by him.

55.A(4). In respect of all labour directly or indirectly employed in the work for performance of the contractor's part of, the contract, the Contractor shall comply with or cause to be complied with the provisions of the aforesaid Act and Rules wherever applicable.

55.A(5). In every case in which, by virtue of the provisions of the aforesaid Act or the Rules, the DFCCIL is obliged to pay any amount of wages to a workman employed by the Contractor or his sub-contractor in execution of the work or to incur any expenditure on account of the Contingent, liability of the DFCCIL due to the contractor's failure to fulfil his statutory obligations under the aforesaid Act or the rules the DFCCIL will recover from the Contractor, the amount of wages so paid or the amount of expenditure so incurred, and without prejudice to the rights of the DFCCIL under the section 20, sub-section (2) and section 2, sub-section (4) of the aforesaid Act, the

DFCCIL shall be at liberty to recover such amount or part thereof by deducting it from the running bills and/ or from any sum due by the DFCCIL to the contractor whether under the contract or otherwise. The DFCCIL shall not be bound to contest any claim made against it under sub-section of section 20 and sub-section (4) of section 21 of the aforesaid Act except on the written request of the contractor and upon his giving to the DFCCIL full security for all costs for which the DFCCIL might become liable in contesting such claim. The decision of the DFCCIL regarding the amount actually recoverable from the contractor as stated above shall be final and binding on the Contractor.

55 B Provisions of Employees Provident Fund and Miscellaneous Provisions Act, 1952:

The Contractor shall comply with the provisions of Para 30 & 36- B of the Employees Provident Fund Scheme, 1952; Para 3 & 4 of Employees' Pension Scheme, 1995; and Para 7 & 8 of Employees Deposit Linked Insurance Scheme, 1976; as modified from time to time through enactment of "Employees Provident Fund & Miscellaneous Provisions Act, 1952", wherever applicable and shall also indemnify the DFCCIL from and against any claims under the aforesaid Act and the Rules.

55C (i) Contractor is to abide by the provisions of various labour laws in terms of above clause 54, 55, 55-A and 55-B of the Standard General Conditions of Contract. In order to ensure the same, an application has been developed and hosted on website 'www.shramikkalyan.indianrailways.gov.in'. The contractor shall register his firm/company etc. and upload requisite details of labour and their payment in this portal. These details shall be available in public domain. The registration/ updation in Portal shall be done as under:

- a) Contractor shall apply for onetime registration of his company/firm etc. in the Shramikkalyan portal with requisite details subsequent to issue of Letter of Acceptance. Engineer shall approve the contractor's registration in the portal within 7 days of receipt of such request.
 - b) Contractor once approved by any Engineer, can create password with login ID (PAN No.) for subsequent use of portal for all Letter of Acceptances (LoAs) issued in his favour.
 - c) The contractor once registered on the portal, shall provide details of his Letter of Acceptances (LoAs) / Contract Agreements on shramikkalyan portal within 15 days of issue of any LoA for approval of concerned Engineer. Engineer shall update (if required) and approve the details of LoA filled by contractor within 7 days of receipt of such request.
 - d) After approval of LoA by Engineer, contractor shall fill the salient details of contract labours engaged in the contract and ensure updating of each wage payment to them on shramikkalyan portal on monthly basis.
 - e) It shall be mandatory upon the contractor to ensure correct and prompt uploading of all salient details of engaged contractual labour & payments made thereof after each wage period.
- (ii) While processing payment of any 'On Account Bill' or 'Final Bill' or release of 'Advances' or 'Performance Guarantee', contractor shall submit a certificate to the Engineer or Engineer's representatives that "I have uploaded the correct details of contract labours engaged in connection with this contract and payments made to them during the wage period in Railway's Shramikkalyan portal at 'www.shramikkalyan.indianrailways.gov.in' till ____Month, ____Year."

56 Reporting of Accidents of Labour:-The Contractor shall be responsible for the safety of all employees directly or through petty contractors or sub- contractor employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the works to the Engineer or the Engineers Representative and shall made every arrangements to render all possible assistance.

57. Provision of Workmen's Compensation Act: In every case in which by virtue of the provisions of section 12 sub-section (1) of the Workmen's Compensation Act 1923, DFCCIL is obliged to pay compensation to a workman directly or through petty contractor or subcontractor employed by the Contractor in executing the work, DFCCIL will recover from the Contractor the amount of the

compensation so paid, and, without prejudice to the rights of DFCCIL under Section 12 Sub-section of the said Act, DFCCIL shall be at liberty to recover such amount or any part thereof by deducting it from the next running bills or from any sum due by DFCCIL to the Contractor whether under these conditions or otherwise, DFCCIL shall not be bound to contest any claim made against it under Section 12 Sub-section (1) of the said Act except on the written request of the Contractor and upon his giving to DFCCIL full security for all costs for which DFCCIL might become liable in consequence of contesting such claim.

- 57.A Provision of Mines Act:-** Not applicable for O & M contract.
- 58.** DFCCIL not to provide quarters for Contractors: No quarters shall normally be provided by the DFCCIL for the accommodation of the contractor or any of his staff employed on the work.
- 59(1). Labor Camps:** Refer SCC of this Contract.
- 59(2). Compliance to rules for employment of labour:-** The contractor(s) shall conform to all laws, by-laws rules and regulations for the time being in force pertaining to the employment of local or imported labour and shall take all necessary precautions to ensure and preserve the health and safety of all staff employed directly or through petty contractors or sub-contractors on the works.
- 59(3). Preservation of peace:-** The contractor shall take requisite precautions and use his best endeavors to prevent any riotous or unlawful behavior by or amongst his workmen and other employed directly or through the petty contractors or sub-contractors on the works and for the preservation of peace and protection of the inhabitants and security of property in the neighborhood of the works. In the event of the DFCCIL requiring the maintenance of a special Police Force at or in the vicinity of the site during the tenure of works, the expenses thereof shall be borne by the contractor and if paid by the DFCCIL shall be recoverable from the contractor.
- 59(4). Sanitary arrangements:** The contractor shall obey all sanitary rules and carry out all sanitary measures that may from time to time be prescribed by the Medical Authority and permit inspection of all sanitary arrangements at all times by the Engineer, the Engineer's Representative of the Medical staff of the DFCCIL. Should the contractor fail to make the adequate sanitary arrangements, these will be provided by the DFCCIL and the cost therefore recovered from the contractor.
- 59(5). Outbreak of infectious disease:** The contractor shall remove from his camp such labour and their families as refuse protective inoculation and vaccination when called upon to do so by the Engineer or the Engineer's representative on the advice of the DFCCIL. Should cholera, plague or other infectious disease break out, the contractor shall burn the huts, beddings, clothes and other belongings of or used by the infected parties and promptly erect new huts on health sites as required by the engineer, failing which within the time specified in the Engineer's requisition, the work may be done by the DFCCIL and the cost therefore recovered from the contractor.
- 59(6).** Deleted
- 59(7). Medical facilities at site: -** The Contractor shall provide medical facilities at the site as may be prescribed by the Engineer on the advice of the DFCCIL in relation to the strength of the Contractor's **resident** staff and workmen.
- 59(8). Use of intoxicants: -** The sale of **ardent** spirits or other intoxicating beverages upon the work or in any of the buildings, encampments or tenements owned, occupied by or within the control of the contractor or any of his employees shall be forbidden and the Contractor shall exercise his influence and authority to the utmost extent to secure strict compliance with this condition.
- 59(9). Non-employment of female labour:** The Contractor shall see that the employment of female labour on/in Cantonment areas, particularly in the neighborhood of soldier's barracks, should be avoided as far as possible.

- 59(10). Restrictions On The Employment Of Retired Engineers Of Railway/DFCCIL Services Within one Year Of Their Retirement :** The Contractor shall not, if he is a retired Government Engineer of Gazetted rank, himself engage in or employ or associate a retired Government Engineer of Gazetted rank, who has not completed one year from the date of retirement, in connection with this contract in any manner whatsoever without obtaining prior permission of the President and if the Contractor is found to have contravened this provision it will constitute a breach of contract and administration will be entitled to terminate the contract and forfeit BID SECURITY and Performance Guarantee (PG) of that contract.
- 60.(1). Non-employment of labours below the age of 15:** the Contractor shall not employ children below the age of 15 as laborer's directly or through petty contractors or subcontractors for the execution of work.
- 60.(2). Medical Certificate of fitness for labour:** It is agreed that the contractor shall not employ a person above 15 and below 19 years of age for the purpose of execution of work under the contract unless a medical certificate of fitness in the prescribed form (Proforma at **Form- 22**) granted to him by a certifying surgeon certifying **that** he is fit to work as an adult is obtained and kept in the custody of the contractor or a person nominated by him in this behalf and the person carries with him, while at work; a token giving a reference to such certificate. It is further agreed that the responsibility for having the adolescent examined medically at the time of appointment or periodically till he attains the age of 19 years shall devolve entirely on the contractor and all the expenses to be incurred on this account shall be borne by him and no fee shall be charged from the adolescent or his parent for such medical examination.
- 60.(3). Period of validity of medical fitness certificate:** - A certificate of fitness granted or renewed for the above said purposes shall be valid only for a period of one year at a time. The certifying surgeon shall revoke a certificate granted or renewed if in his opinion the holder of it is, no longer fit for work in the capacity stated therein. Where a certifying surgeon refuses to grant or renew a certificate or revoke a **certificate**, he shall, if so required by the person concerned, state his reasons in writing for doing so.
- 60.(4). Medical re-examination of labourer:-** Where any official appointed in this behalf by the Ministry of labour is of the opinion that any person employed in connection with the execution of any work under this contract in the age group 15 to 19 years is **without** a certificate of fitness or is having a certificate of fitness but no longer fit to work in the capacity stated in the certificate, he may serve on the Contractor, or on the person nominated by him in the regard, a notice requiring that such persons shall be examined by a certifying surgeon and such person shall not if the concerned official so directs, be employed or permitted to do any work under this contract unless he has been medically examined and certified that he has been granted a certificate of fitness or a fresh certificate of fitness, as the case may be.

EXPLANATIONS:-

- (1) Only qualified medical practitioners can be appointed as "Certifying Surgeons" and the term "Qualified Medical Practitioners" means a person holding a qualification granted by an authority specified in the Schedule to the Indian Medical Degrees Act, 1916 (VII of 1916) or in the Schedule to the Indian Medical Council Act, 1933 (XXVII) of 1933.
- (2) The Certifying surgeon may be a medical officer in the service of State or Municipal Corporation.

DETERMINATION OF CONTRACT

- 61.(1). Right of DFCCIL of determine the contract:** The DFCCIL shall be entitled to determine and terminate the contract at any time should, in the DFCCIL's opinion, the cessation of work becomes necessary owing to paucity of funds or from any other cause whatever.
- 61.(2). Payment on determination of contract:** Refer SCC of this O & M Contract.

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61.(3). The contractor shall have no claim to any payment of compensation or otherwise, howsoever on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of determination of contract. Refer SCC of this O & M Contract

62(1) Determination of contract owing to default of contractor: If the Contractor should:

- (i) Becomes bankrupt or insolvent, or
- (ii) Make an arrangement with of assignment in favour of his creditors, or agree to carry out the contract under a Committee of Inspection of his creditors, or
- (iii) Being a Company or Corporation, go into liquidation (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), or
- (iv) Have an execution levied on his goods or property on the works, or
- (v) Assign the contract or any part thereof otherwise than as provided in Clause 7 of these conditions, or
- (vi) Abandon the contract, or
- (vii) Persistently disregard the instructions of the Engineer, or contravene any provision of the contract, or
- (viii) Fail to Execute the contract documents on time or
- (ix) Fail to remove materials from the site or to pull down and rectify work after receiving from the Engineer notice to the effect that the said materials or works have been condemned or rejected under clause 25 and 27 of these conditions, or
- (x) Fail to take steps to employ competent or additional staff and labour as required under clause 26 of the conditions.
- (xi) Fail to afford the Engineer or Engineer's representative proper facilities for inspecting the work or any part thereof as required under clause 28 of the conditions, or
- (xii) Promise, offer or give any bribe, commission, gift or advantage either himself or through his partner, agent or servant to any officer or employee of the DFCCIL or to any person on his or on their behalf in relation to the execution of this or any other contract with this DFCCIL.
- (xiii) At any time after the tender relating to the contract, has been signed and submitted by the Contractor, being a partnership firm admit as one of its partners or employee under it or being an incorporated company elect or nominate or allow to act as one of its directors or employee under it in any capacity whatsoever any retired engineer of the gazetted rank or any other retired gazetted officer working before his retirement, whether in the executive or administrative capacity, or whether holding any pensionable post or not, in the DFCCIL for the time being owned and administered by the President of India before the expiry of one year from the date of retirement from the said service of such Engineer or Officer unless such Engineer or Officer has obtained permission from the President of India or any officer duly authorized by him in this behalf to become a partner or a director or to take employment under the contract as the case may be, or
- (xv) Fail to give at the time of submitting the said tender:
 - a. The correct information as to the date of retirement of such retired engineer or retired officer from the said service, or as to whether any such retired engineer or retired officer was under the employment of the Contractor at the time of submitting the said tender, or
 - b. The correct information as to such engineers or officers obtaining permission to take employment under the contractor, or
 - c. Being a partnership firm, the correct information as to, whether any of its partners was such a retired engineer or a retired officer, or
 - d. Being in incorporated company, correct information as to whether any of its directors was such a retired engineer or a retired officer, or
 - e. Being such a retired engineer or retired officer suppress and not disclose at the time of submitting the said tender the fact of his being such a retired engineer or a retired officer or make at the time of submitting the said tender a wrong statement in relation to his obtaining

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permission to take the contract or if the contractor be a partnership firm or an incorporated company to be a partner or director of such firm or company as the case may be or to seek employment under the contractor.

Then and in any of the said clause, the Engineer on behalf of the DFCCIL may serve the Contractor with a notice (as per Proforma as **Form-23**) in writing to that effect and if the contractor does not within seven days after the delivery to him such notice proceed to make good his default in so far as thereof being made good and carry on the work or comply with such directions as aforesaid of the entire satisfaction of the Engineer, the DFCCIL shall be entitled after giving 48 hours' notice (as per Proforma as **Form-24**) in writing under the hand of the Engineer to rescind the and after expiry of 48 hours' notice, a final termination notice (as per Proforma as **Form-25**) should be issued and adopt the following courses:

To measure up of the work from which the contractor has been removed and get it completed by another contractor, the manner and method in which such work is completed shall be in the entire discretion of the Engineer whose decision shall be final.

62.(2). Right of DFCCIL after, rescission of contract owing to default of contractor: In the event of any or several of the courses, referred to in sub-clause (1) of the clause, being adopted.

- (a) the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and contractor shall not be entitled to recover or be paid any sum for any work thereto for actually performed under the contract unless and until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the contractor shall only be entitled to be paid the value so certified.
- (b) In the contract which has been rescinded, the Performance Guarantee already submitted for the contract shall be encashed. The failed Contractor shall be debarred from participating in the tender for executing the balance work. If the failed Contractor is a JV or a Partnership firm, then every member/partner of such a firm shall be debarred from participating in the tender for the balance work in his/her individual capacity or as a partner of any other JV /partnership firm.

Further the authorized representative of failed Contractor cannot be accepted as authorized representative in new contract.

STATEMENT OF DISPUTES - ARBITRATION

63.0 Conciliation of Disputes

- (i) This clause is applicable in the tender having an advertised value less than or equal to Rs 50 (Fifty) Crore.
- (ii) All disputes and differences of any kind whatsoever arising out of or in connection with the contract, whether during the progress of the work or after its completion and whether before or after the determination of the contract, shall be referred by the Contractor to the " CGM/CPM/GM " through "Notice of Dispute" provided that no such notice shall be served later than 30 days after the date of issue of Completion Certificate by the Engineer. CPM/CGM/GM shall, within 30 days after receipt of the Contractor's "Notice of Dispute", notify the name of conciliator(s) to the Contractor.
- (iii) The Conciliator(s) shall assist the parties to reach an amicable settlement in an independent and impartial manner within the terms of contract.

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- (iv) In case the total value of all claims in dispute added together does not exceed Rs. One Crore, the number of Conciliator shall be one. For claims more than Rs. One Crore and upto Rs. Fifty Crore, the number of Conciliators shall be three.
- (v) The Sole Conciliator shall be nominated by the MD/ DFCCIL from the List of Empaneled Arbitrators / Conciliators maintained by DFCCIL. The sole arbitrator shall be appointed within 60 days from the day when a written and valid demand for Conciliation is received by CGM/CPM/GM of DFCCIL.
- (vi) In case, the Conciliation process consist of a panel of three members, the DFCCIL will send a panel of at least four (4) names from the List of Empaneled Arbitrators /Conciliators with DFCCIL empaneled to work as Arbitrator /Conciliator to the Contractor within 60 days from the day when a written and valid demand for Conciliation is received by the CGM/CPM/GM of DFCCIL. The contractor will be asked to suggest to MD/DFCCIL at least 2 names out of the panel for appointment as Contractor's nominee within 30 days from the date of dispatch of the request by DFCCIL. The MD shall appoint at least one out of them as the Contractor's nominee and will, also simultaneously appoint the balance number of conciliators either from the panel or from outside the panel, duly indicating the 'presiding conciliator' from amongst the 3 conciliators so appointed. MD DFCCIL shall complete this exercise of appointing the Conciliation Panel within 30 days from the receipt of the names of Contractor's nominees.
- (vii) If the parties reach agreement on a settlement of the dispute, they shall draw up and sign a written settlement agreement duly signed by Engineer, Contractor and conciliator(s). When the parties sign the settlement agreement, it shall be final and binding on the parties.
- (viii) The parties shall not initiate, during the conciliation proceedings, any arbitral or judicial proceedings in respect of a dispute that is the subject matter of the conciliation proceedings.
- (ix) The conciliation proceedings shall be subject to the provisions of the Arbitration and Conciliation Act 1996 and its amendments thereof.

63.1 Matters Finally Determined by the DFCCIL: All disputes and differences of any kind whatsoever arising out of or in connection with the contract, whether during the progress of the work or after its completion and whether before or after the determination of the contract, shall be referred by the Contractor to the MD/DFCCIL and the MD/DFCCIL shall, within 120 days after receipt of the Contractor's representation, make and notify decisions on all matters referred to by the Contractor in writing provided that matters for which provision has been made in Clauses 7(j), 8, 18, 22(5),39.1, 39.2, 40A,43(2), 45(i)(a), 55, 55-A(5), 57, 57A,61(1), 61(2),62(1), 63(iv) and 63.2.11 of the General Conditions of Contract or in any Clause (stated as excepted matter) of the Special Conditions of the Contract, shall be deemed as 'excepted matters' (matters not arbitrable) and decisions of the DFCCIL authority, thereon shall be final and binding on the Contractor; provided further that 'excepted matters' shall stand specifically excluded from the purview of the Conciliation, Dispute Adjudication Board (DAB) and Arbitration.

63.2 Dispute Adjudication Board (DAB): Not applicable for this work.

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- 64.(1) (ii)** The demand for arbitration shall specify the matters which are in question, or subject of the dispute or difference as also the amount of claim item wise. Only such dispute or difference, in respect of which the demand has been made, together with counter claims or set off, given by the DFCCIL, shall be referred to arbitration and other matters shall not be included in the reference.
- 64.(1) (iii)** (a) The arbitration proceedings shall be assumed to have commenced from the day, a written and valid demand for arbitration is received by the DFCCIL.
- (b) The claimant shall submit his claim stating the facts supporting the claims along with all the relevant documents and the relief or remedy sought against each claim within a period of 30 days from the date of appointment of the Arbitral Tribunal.
- (c) The DFCCIL shall submit its defence statement and counter claim(s), if any, within a period of 60 days of receipt of copy of claims from Tribunal thereafter, unless otherwise extension has been granted by Tribunal.
- (d) The seat of arbitration would be (New Delhi). However, the venue for arbitration meetings or hearings can be any other place with the consent of parties.
- (e) Both the parties shall submit to the jurisdiction of the courts situated at New Delhi for the purpose of actions and proceedings arising out of the contract and the courts at Delhi shall have the sole and exclusive jurisdiction to hear and decide such actions and proceedings.
- 64.(1)(iv)** No new claim shall be added during proceedings by either party. However, a party may amend or supplement the original claim or defence thereof during the course of arbitration proceedings subject to acceptance by Tribunal having due regard to the delay in making it.
- 64.(1)(v)** If the contractor(s) does/do not prefer his/their specific and final claims in writing, within a period of 90 days of receiving the intimation from the DFCCIL that the final bill is ready for payment, he/they will be deemed to have waived his/their claim(s) and the DFCCIL shall be discharged and released of all liabilities under the contract in respect of these claims.
- 64.(2) Obligation During Pendency of Arbitration:** Work under the contract shall, unless otherwise directed by the Engineer, continue during the arbitration proceedings, and no payment due or payable by the DFCCIL shall be withheld on account of such proceedings, provided, however, it shall be open for Arbitral Tribunal to consider and decide whether or not such work should continue during arbitration proceedings.
- 64.(3) Appointment of arbitrator**
- 64.(3)(a):** In cases where the total value of all claims in question added together does not exceed ₹ 1,00,00,000/- (Rupees One Crore), the Arbitral Tribunal shall consist of a Sole Arbitrator from the List of Empaneled Arbitrators, nominated by the MD/DFCCIL. The sole arbitrator shall be appointed within 60 days from the day when a written and valid demand for arbitration is received by MD/ DFCCIL.
- 64.(3)(b):** In cases not covered by the Clause 64(3)(a), the Arbitral Tribunal shall consist of a panel of three members, as the arbitrators. For this purpose, a broad-based panel of Arbitrators shall be

maintained in DFCCIL corporate office, New Delhi. The panel, which shall not be less than 5 members, shall be sent by CGM/GM DFCCIL to the Contractor to nominate one member of Arbitral Tribunal from the Panel as Contractor's Nominee within 2 weeks of receipt of the panel. On receipt of Contractor's Nominee, the MD/DFCCIL shall nominate one member from the same panel as DFCCIL nominee for the Arbitral Tribunal. Both above nominees shall jointly select Presiding Arbitrator of the Arbitral Tribunal from the same panel.

64.(3)(c) (i): If one or more of the arbitrators appointed as above refuses to act as arbitrator, withdraws from his office as arbitrator, or vacates his/their office/offices or is/are unable or unwilling to perform his functions as arbitrator for any reason whatsoever or dies or in the opinion of the MD DFCCIL fails to act without undue delay, the MD DFCCIL shall appoint new arbitrator/arbitrators to act in his/their place in the same manner in which the earlier arbitrator/arbitrators had been appointed. Such re-constituted Tribunal may, at its discretion, proceed with the reference from the stage at which it was left by the previous arbitrator (s).

64.(3)(c)(ii): (a) The Arbitral Tribunal shall have power to call for such evidence by way of affidavits or otherwise as the Arbitral Tribunal shall think proper, and it shall be the duty of the parties hereto to do or cause to be done all such things as may be necessary to enable the Arbitral Tribunal to make the award without any delay. The proceedings shall normally be conducted on the basis of documents and written statements.

(b) Before proceeding into the merits of any dispute, the Arbitral Tribunal shall first decide and pass its orders over any plea submitted/objections raised by any party, if any, regarding appointment of Arbitral Tribunal, validity of arbitration agreement, jurisdiction and scope of the Tribunal to deal with the dispute (s) submitted to arbitration, applicability of time 'limitation' to any dispute, any violation of agreed procedure regarding conduct of the arbitral proceedings or plea for interim measures of protection and record its orders in day to day proceedings. A copy of the proceedings duly signed by all the members of tribunal should be provided to both the parties.

64.3(c)(iii): While appointing arbitrator(s) under Sub-Clause 64.(3)(a) & 64.(3)(b) above, due care shall be taken that he/they is/are not the one/those who had an opportunity to deal with the matters to which the contract relates or who in the course of his/their duties as DFCCIL/Railway servant(s) expressed views on all or any of the matters under dispute or differences. A certification to this shall be taken from Arbitrators also. The proceedings of the Arbitral tribunal or the award made by such Tribunal will, however, not be invalid merely for the reason that one or more arbitrator had, in the course of his service, opportunity to deal with the matters to which the contract relates or who in the course of his/their duties expressed views on all or any of the matters under dispute.

64.(3)(d)(i): The arbitral award shall state item wise, the sum and reasons upon which it is based. The analysis and reasons shall be detailed enough so that the award could be inferred therefrom.

64.(3)(d)(ii): A party may apply for corrections of any computational errors, any typographical or clerical errors or any other error of similar nature occurring in the award of a Tribunal and interpretation of a specific point of award to Tribunal within 60 days of receipt of the award.

64.(3)(d)(iii): A party may apply to Tribunal within 60 days of receipt of award to make an additional award as to claims presented in the arbitral proceedings but omitted from the arbitral award.

64.(4): In case of the Tribunal, comprising of three members, any ruling on award shall be made by a majority of members of Tribunal. In the absence of such a majority, the views of the Presiding

Arbitrator shall prevail.

- 64.(5):** Where the arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period till the date on which the award is made.
- 64.(6):** The cost of arbitration shall be borne by the respective parties. The cost shall inter-alia include fee of the arbitrator(s), as per the rates fixed by DFCCIL from time to time and the fee shall be borne equally by both the parties, provided parties sign an agreement. After/ while referring these disputes to Arbitration. Further, the fee payable to the arbitrator(s) would be governed by the instructions issued on the subject by DFCCIL from time to time irrespective of the fact whether the arbitrator(s) is/are appointed by the DFCCIL or by the court of law unless specifically directed by Hon'ble court otherwise on the matter.
- 64.(7)** Subject to the provisions of the aforesaid Arbitration and Conciliation Act 1996 (as amended up to date) and the rules thereunder and relevant para of the General Conditions of Contract and any statutory modifications thereof shall apply to the appointment of arbitrators and arbitration proceedings under this Clause.
- 64.(8)** In case arbitration award is challenged by a party in the Court of Law, 75% of award amount, pending adjudication by Court of Law, shall be made by party to other party. In case payment is to be made by DFCCIL to Contractor, the terms & conditions incorporated in the DFCCIL Policy as amended from time to time, shall be followed. In case Contractor has to pay to the DFCCIL, then 75% of the award amount shall be deducted by the DFCCIL from the Contractor's bills, Performance Guarantee or any other dues of Contractor with the Government of India.
- 64.(9)** The Arbitrator Fee will be governed by the latest Fee structure for empanelled DFCCIL arbitrators.

CHAPTER - VI

SPECIAL CONDITIONS OF CONTRACT

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CHAPTER - VI

Special Conditions of Contract (SCC) For Operation and Maintenance of RBMV

1.1 Objective

The objective of this O & M Contract is the operation and maintenance of DFCCIL's RBMV and supply of consumables for smooth working of RBMV by the O & M Contractor in the manner and to the standards and within the time stipulated in this RFP. In full recognition of this objective and with full acceptance of the obligations, liabilities and risks which may be involved, the O & M Contractor shall undertake the execution of the O & M Works of RBMV. The Operation and Maintenance work of RBMV shall be executed to the highest standards available using proven up-to-date good Engineering practices.

This Tender will be governed by instructions to tenderers, General condition of Contract, Special conditions of contract and Prescribed Maintenance Activities of RBMV as per OEMs Manual which are attached as Annexure VII, VIII, IX, X of this RFP. If there are varying or conflicting provisions in the documents forming part of the contract, Engineer shall be deciding authority regarding the intentions of the provision and decision of Engineer will be final and binding on the O & M contractor.

1.2 ORDER OF PRECEDENCE

In case of any difference, contradiction, discrepancy, with regard to Conditions of tender/contract, Specifications, Bill of quantities etc., forming part of the tender/contract, the following shall be the order of precedence:

- (m) Contract Agreement
- (n) Letter of Award
- (o) Schedule of Items, Rates & Quantities
- (p) Special Conditions of Contract
- (q) Technical specification of DFCCIL RBMV
- (r) General Conditions of Contract
- (s) Schedule of Dimension of DFCCIL
- (t) G & S R of DFCCIL
- (u) OEM RBMV Operation Manual,
- (v) OEM RBMV Maintenance Manual and other Manuals
- (w) DFC Railroad Manual
- (x) Indian Railway Track Machine Manual

1.3 Scheme of work

Within a period of 15 days from the date of issue of Letter of Acceptance of Tender, the O & M Contractor shall submit the detailed plan for Operation & Maintenance of RBMV and various documents enumerated in tender papers to DFCCIL. DFCCIL shall give prior notice of 15 days to Contractor for mobilization and start of work at site. This scheme of the O & M Contractor shall generally cover the following: -

- a) The organization to manage efficient Operation & Maintenance of RBMV.
- b) The documentation control system:
 - i) Basic control system.
 - ii) Records for maintenance
 - iii) Manual for operation & maintenance of machine based on IRTMM manual, DFCCIL's Technical specification of RBMV and OEM manual for RBMV

1.4 APPLICABLE TECHNICAL DOCUMENTS

The following manual/documents will be applicable for this work:

- (a) Technical specification RBMV.
- (b) OEM manual for RBMV Operation and Maintenance.
- (c) Indian Railway Track Machine Manual as updated on date of opening of tender. An updated copy of above manual/documents is available on Indian Railway web site Indianrailways.gov.in/railway board.
- (d) Schedule of Dimensions (SOD). (An updated copy of above manual/documents is available on Indian Railway web site Indianrailways.gov.in/railway board and DFCCIL SOD).
- (e) DFCCIL's General & Subsidiaries rules (Copy may be collected from DFCCIL), and
- (f) DFCCIL's SHE Manual (An updated copy of the above manual is available on DFCCIL web site).

Note: Changes made in the above documents during execution of contract will be communicated to O & M contractor by DFCCIL under clear acknowledgment. Subsequent changes after the date of opening of tender including correction slips to above documents will be applicable only when revision of rates, terms and conditions are worked out with mutual consent.

1.5 Obligations of Contractor & DFCCIL are incorporated in tender document & important obligations on both parties are summarized below:

(a) Contractor's obligations:

- i) Maintain the RBMV as per OEMs Operation and Maintenance Manual by providing timely consumables and maintenance staff etc. by his own manpower.
- ii) Ensuring availability of agreed scale of staff for operation (movement, shifting and working) and maintenance of track machines.
- iii) Ensuring availability of RBMV for working for 75 days in a quarter.
- iv) Offer the RBMV timely to DFCCIL for obtaining traffic block and avail traffic block as granted.
- v) The block timings may be different depending upon the traffic pattern and shall be advised to the supervisor in advance, who will ensure that the machine is offered with due daily maintenance at least 30 minutes before the tentative block time.
- vi) Carry out the O & M of RBMV by his own Machine Experts, Supervisors, Operators, Technicians and Helpers.
- vii) Indemnify the DFCCIL and maintain insurance as per contract.
- viii) Provide accommodation and transport facilities to its staff.
- ix) The contractor will ensure validity of competency of staff and for this purpose he will spare the staff in time for refresher courses, Periodical Medical Examination and arrange suitable replacement at par with Indian Railway Track machine operators.
- x) Shall maintain the record and submit periodical progress/information/reports as per contract.
- xi) Shall make arrangements to expeditiously clear the block section in case of failure/derailment of RBMV by his own means and at his own cost.
- xii) During breakdown maintenance, O & M Contractor shall provide:
 - a. All necessary manpower needed to restore the RBMV for operation.
 - b. All additional manpower and specialists for immediate troubleshoot and repair in the least possible time.
- xiii) After completion of days/nights works contractor shall ensure that all equipment, tools and plants is cleared before leaving the site. No material whatsoever shall

- be left behind on track.
- xiv) The contractor shall ensure that all his staff wear proper uniform with personal protective equipment including helmet, safety shoes and illuminated jacket etc. while working.
- xv) The contractor shall take all necessary safety measures & precautions and the contractor shall be entirely responsible for the safety & security of his men & materials.
- xvi) Contractor shall provide Photo-identity cards to all his staff & supervisors.
- xvii) Shall Adhere to statutory laws.
- xviii) To deploy competent staff fulfilling necessary medical requirements. Medical examination at nominated medical hospital/Health centre and charges of medical examination will be borne and paid by contractor.
- xix) While working on double/multiple line sections and part of RBMV shall not infringe the adjoining track, and it must be possible to permit trains at full speed on that track. If considered unavoidable for working, any infringement of the adjoining track shall be allowed only after obtaining the traffic block of that track.
- xx) The cost of all Manpower and Service Engineer (including of OEMs) required for all schedules of maintenance prescribed in OEM Maintenance Manuals are included in agreed rates of item No. 1 of Schedule A of SOR of this RFP.
- xxi) In the case of repair of Proprietary software/related hardware of the electronic components of the RBMV, Contractor has to transport the part to their nearest workshop at his own cost.
- xxii) DFCCIL will provide free access to Contractor's operation and maintenance team members/vehicles/tools etc. The contractor will notify DFCCIL about the arrival of tools/heavy spares carrying vehicles for maintenance of the RBMV well in advance, if it is expected after normal works hours.

(b) DFCCIL's obligations:

- i) To ensure timely availability of work site to O & M Contractor.
- ii) Arrange HSD oil for RBMV.
- iii) Provide look out men for safety of track and workers during block as per conditions of contract.
- iv) To communicate changes made in IR/DFCCIL manuals/codes i.e. IRPWM, G&SR, IRTMM etc. to contractor.
- v) DFCCIL will provide the required training of contractor's staff regarding track protection, G & SR and issue valid competency certificate on payment basis.
- vi) DFCCIL will provide and impose Speed Restrictions required for the work (if required).
- vii) DFCCIL will erect caution indicator boards, speed indicator boards and termination boards at appropriate locations as per prevalent speed restriction.
- viii) DFCCIL will ensure timely availability of competent DFCCIL staff to submit requisition for traffic block, obtain and clear traffic block after completion of work.
- ix) DFCCIL will depute sufficient support staff (Engineering, S&T etc.) as per requirement during working of RBMV including look out/safety men for ensuring safety of track, train and workers at its own cost.
- x) DFCCIL will ensure timely shifting of track machines by providing path and Competent DFCCIL(LP/ALP), wherever required.
- xi) DFCCIL will provide suitable sidings/track for stabling of track machines, nearest possible to work site.
- xii) DFCCIL will provide sufficient open space in the nearest track machine depot/ISMD/IMD for storage of spares/consumables. DFCCIL shall provide, free of charge, adequate space for lubricants and spares at central depot location (if required) and office for manpower at depots, with free electricity
- xiii) After work the block section should be cleared at the earliest and if contractor is not able to clear the block section in case of failure/derailment of RBMV. In such, cases requiring DFCCIL's assistance of loco/ART/MFD van etc, the penalty as per

- contract will also be levied by DFCCIL on O & M contractor.
- xiv) DFCCIL will examine the bills submitted by the contractor and will make timely payment as per contract conditions.
 - xv) Wherever required, all necessary permissions have to be ensured by the DFCCIL.
 - xvi) DFCCIL shall intimate about the working hour well in advance preferably one day in advance. Before the end of each day's work the contractor shall be advised in writing by DFCCIL of the commencement time and duration of the following day's occupation(s).
 - xvii) The live electric/signaling/telecom cables will be removed by concerned DFCCIL staff at their cost.
 - xviii) Any item which is not specifically included in the scope of O & M contractor will be carried out by DFCCIL either departmentally or through other agencies.
 - xix) Adhere to all its obligations as per O & M Contract conditions.

1.6 GENERAL REQUIREMENTS

- 1.6.1 During the execution of the contract HSD and spare parts are to be provided by DFCCIL free of cost to the O & M Contractor at Stabling siding. The cost of all consumables, manpower and other logistics required for operation and maintenance of machines are included on contract price excluding cost of HSD oil at RBMV stabling siding.
- 1.6.2 The O & M Contractor is responsible for ensuring the availability of machines for 08 hour every day for working operation (which might be increased by up to 2 to 3 hours depending on traffic condition over DFCCIL during operation). During maintenance shift, the stipulated maintenance of RBMV stipulated preventive checks and schedule maintenance of RBMV including all assemblies as specified by OEM in Various OEM/Machine Manufacturer manuals to ensure its upkeep shall be carried out.
- 1.6.3 The timings of the shift are not fixed and will change depending upon corridor block timings. However, the overall shift time shall be 8 Hrs in a day. Roster of shift shall be issued by the respective field unit on weekly basis.
- 1.6.4 The machines will work on DFC tracks with the trains running on adjacent IR/DFC tracks. The O & M Contractor must ensure the care/safety/ health hazards of the labours engaged by him/her during the course of the execution of work. Necessary safety equipment shall be provided by the O & M Contractor for the staff engaged by him. No extra amount is payable for this.
- 1.6.5 O & M Contractor shall provide adequate and appropriate security at their disposal to protect and preserve the RBMV Machines from anti- social elements especially in insurgency defined areas, where the machine may be required to operate from time to time for which O & M Contractor shall arrange Insurance for RBMV and the cost of same will be reimbursed by DFCCIL on production of Premium payment receipts on time to time.
- 1.6.6 The manpower employed by the O & M contractor shall have no right, whatsoever, for any appointment in the DFCCIL in temporary/adhoc/ daily wages/ regular capacity on the basis of their work in the DFCCIL territory.
- 1.6.7 Authorized DFCCIL's representative having route learning of the particular section where the RBMV is working will be present for supervising the operation and to monitor the movement of the RBMV from one section to another. RBMV shall not be moved without authorized DFCCIL's representative. The same would be provided free of charge.
- 1.6.8 All tools and plants, drawings, manuals which are supplied by the DFCCIL to O & M Contractor free of cost for use along with the RBMV shall be handed over back to DFCCIL in good condition after expiry of the contract period to DFCCIL authorized personnel.

- 1.6.9 When the RBMV is on transit from one station to another, there will be no routine maintenance, and RBMV shall be made available for movement in two shifts of 10 hours each (2x10 hours) in 24 hours' time frame till it reaches destination. The staff of operation and maintenance shall be so redistributed to perform transit work with sufficient staff.
- 1.6.10 Special cleaning of RBMMV shall be carried out once a month with detergents and other cleaning agents to remove all soot, dust and to keep the entire RBMV in good appearance. The machine will be stabled at a place in OHE/non-OHE siding available so as to ensure proper cleaning. Patch painting at rusted locations should be done after cleaning with matching color. No extra amount is separately payable towards this.
- 1.6.11 Complete and up to date records for daily/ weekly/monthly and higher maintenance schedules will be maintained by the contractor and counter signed by DFCCIL officials. The daily/Weekly/Monthly/ Half yearly progress reports (in mutually agreed formats) shall be **mailed to the nominated DFCCIL official.**
- 1.6.12 Each party agrees to indemnify, defend , and hold harmless the other party from all liability, cost or expense (including any court costs) caused by the joint and /or concurring negligence of the parties, arising on account of injury to or death of any employee, agent or representative of the indemnifying party during the performance of the Services or who shall, if not performing Services, be present as a bystander or otherwise on the property of either party, provided always, however, that if the injury or death to an employee of an indemnifying party is caused solely by the negligence of the other party then this indemnity and hold harmless provision shall be null and void, and the party who solely cause the injury or death shall bear the cost or expense. Notwithstanding any provision herein to the contrary, O & M Contractor's total cumulative liability for any or all claims arising out of this agreement shall not exceed the 10 % value of awarded Contract Amount.
- 1.6.13 The O & M contractor shall ensure compliance with all relevant Central/State laws and rules as applicable such as Tax Laws, Labour Laws and Insurance Laws etc with regard to this O & M contract and shall be solely responsible for the same and shall keep the DFCCIL fully indemnified against the liability of any Taxes, interest, penalty etc if any arising any connection with the contract may be incorporated. If any accident occurs with any worker of the contractor while doing his job, DFCCIL will not be liable in any way and the sole responsibility for payment of compensation, etc. will be of the contractor.

1.7 MAINTENANCE OF RBMV

- 1.7.1 The prescribed activities to be done during various inspection and maintenance schedule of RBMV are attached as **Annexure-VII, VIII, IX and X** of this RFP.
- 1.7.2 The maintenance role encompasses undertaking all schedule/periodic/ routine of RBMV including all assemblies as specified by O & M Contractor/OEM updated from time to time, either by day or night.
- 1.7.3 OEM recommended consumables will be provided by O & M Contractor. The transport of consumables will be done by O & M Contractor without any additional cost.
- 1.7.4 Spare parts of MC will be provided by DFCCIL.
- 1.7.5 The contractor will be responsible for the upkeep of RBMV, along with preventive checks and schedule maintenance of RBMV as whole.
- 1.7.6 Daily maintenance activities shall be strictly followed before/after of Machine working. Other prescribed schedule maintenance is to be performed at appropriate time intervals in the balance time available after offering the RBMV for Block working.

- 1.7.7 Routine maintenance of undercarriage systems shall also be undertaken by the contractor. All Workshop facilities to be arranged by contractor including repair of under frame system and for wheel turning. In case this contractor request DFCCIL to arrange the same from Indian Railway, then if possible, for DFCCIL it will be arranged by DFCCIL on the cost of O & M contractor. The Pit facility will be provided by DFCCIL free of cost at New Dadri or any other station of DFC.
- 1.7.8 The O & M Contractor shall prepare and send to DFCCIL the days scheduled for planned/scheduled maintenance of the track machines during the month at least 15 days in advance of the beginning of the month.

1.8 MAINTENANCE OF RECORDS

- 1.8.1 Maintenance records during Schedule and breakdown maintenance shall be maintained in hard copy as well as soft copy in mutually agreed formats. These records are to be maintained in a register form and are to be kept in the machine itself. These records shall be provided to DFCCIL by the crew on the machine in a timely manner.
- 1.8.2 The contractor shall maintain the history book, logbook and all other documents prescribed for RBMV as per IRTMM and any other document that may be prescribed further in due course of time.
- 1.8.3 The contractor shall compile and submit a standard daily report accurately depicting operational timings, delays, reasons for 'NO work', machine availability, progress achieved by machine and maintenance input given to RBMV machine. DFCCIL representatives will also sign this report on a daily basis. In case of difference of opinion, he will write his observations on the daily report submitted by the O & M contractor for his signature.
- 1.8.4 The signed joint daily report shall be the basis for invoicing and shall constitute DFCCIL's acceptance of day-to-day work apart from the completion of scheduled maintenance in timely manner. Daily progress and history shall be mailed to the nominated DFCCIL official/s along with weekly and monthly progress reports in the prescribed format.

1.9 SPARE PARTS

- 1.9.1 The cost of consumables will be paid by DFCCIL through schedule of SOR items of this RFP. The spare parts of MC will be provided by DFCCIL at its own cost.
- 1.9.2 O & M contractor must maintain adequate liaison with the various OEMs of these parts/units to ensure a quick turnaround of the strategic reserves.
- 1.9.3 During various maintenance schedules various Consumables (filters, oil, lubricants, Coolants, Hydraulic fluids) are to be replaced at regular interval and also to be recouped on need basis. These Consumables are also to be procured timely to maintain minimum inventory level, depending on procurement lead time and transported to DFCCIL warehouse for proper inventory management. Payments of the same shall be released by DFCCIL on receiving the same in DFCCIL warehouse on monthly basis.
- 1.9.4 During the currency of the contract O & M contractor will draw the various spare parts of MC from DFCCIL inventory depot, transport it and install that part on the RBMV at his own cost.
- 1.9.5 The handling of required consumables in DFCCIL depot and loading the same in trucks for transportation to RBMV site has to be arranged by O & M Contractor at his own cost.
- 1.9.6 The Contract scope does not cover the Overhauling of various units of RBMV. If Overhauling/repairing of some parts/units is needed as per advice of OEM's expert advice, then rate of same will be decided mutually by DFCCIL and O & M Contractor.

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- 1.9.7 One 4 wheeler vehicle in good condition with proper road permit and insurance for transporting men and material required for day to day working will be provided by O & M Contractor without any extra payment for transporting his Manpower and various materials and spare parts of RGM/RIV from his /DFCCIL stores.
- 1.9.8 The O & M Contractor shall submit the details of machine consumables required for proper upkeep of Machines. The spare materials supplied by the O & M Contractor for operations and maintenance shall be kept in DFCCIL stores and shall be issued to the Machines as per the machine requirement.

1.10 Operation of track machines:

- 1.10.1 The RBMV shall be ready to work daily sufficiently in advance before the proposed normal block timing as decided in weekly planning. For minimizing the travel time of RBMV, the shunting operations should be done in advance and RBMV should be kept ready near the starter signal towards the block section where the RBMV will work. This shall be planned by the DFCCIL supervisor. The contractor is required to factor this in the daily required working hours of the staff.
- 1.10.2 To move the RBMV from stabling siding to the work site and back, the DFCCIL shall provide the O & M Contractor with a staff, who is aware of the route to provide the directions for movement/travel. However, the O & M contractor will provide sufficient operators to move the machines in shift and will not refuse the movement of the machine.
- 1.10.3 Before the start of new site/ shifting of RBMV base stabling siding, a program will be prepared by the O & M contractor in consultation with sectional APM/DPM of DFCCIL and got signed by both the O & M Contractor and DFCCIL which will include the following:
- Location of the work
 - Location and length of stabling siding
 - Proposed schedule of blocks
 - Site specific precautions
 - Any other item as considered necessary for the work
- 1.10.4 The track for stabling RBMV should be provided with sufficient external lights so as to make them capable of working at night. The contractor shall make his own arrangements for extra lighting at site for working in night.
- 1.10.5 During the block all essential safety and other DFCCIL working rules shall be followed by the contractor as well as DFCCIL staff.
- 1.10.6 In case of failure of RBMV, the Contractor shall promptly inform DFCCIL. Information shall be provided on paper or electronically in a format, which shall be specified by the DFCCIL. The format may be changed from time to time, as required by DFCCIL.
- 1.10.7 If any RBMV breaks down during block and require DFCCIL/Railway's loco/haulage arrangement, in addition to penalty for block bursting, a penalty @ Rs. 1,00,000/- per case will also be charged to contractor and will be adjusted from his running bills. Similarly, if any Rolling stock of RGM Formation/RIV is/are derailed and required assistance of Railway crane/ART/MFD van for re-railing, in addition to penalty for block bursting, a penalty @ Rs. 4,00,000/- per case for crane and Rs. 1,00,000/- for MFD van will also be charged to the O & M contractor and will be adjusted from his running bills. These rates are as on tender opening date. For every year on the anniversary of LOA the above penalty rates shall be increased by 3% compound.

1.11 Traffic block, speed restrictions

The O & M contractor will clear the traffic block in time. Block busting on account of O & M contractor will attract following penalties per instance:

00-15 minute: NIL

15-30 minute: Rs. 10,000/- 30-60 minute: Rs. 15,000/-

> 60 minute: Rs. 20,000/- per hour subject to maximum of Rs. 50,000/-

The above rates are as on tender opening date. For every year on the anniversary of LOA the above penalty rates shall be increased by 3% compounded.

- 1.12 Progress of work is likely to be affected due to various reasons, i.e. technical requirement of work, natural reasons, statutory reasons, DFCCIL account, O & M contractor account etc. Some of the reasons are indicated below (list is only indicative and not exhaustive):

SN	Reason	On account of
1	Shifting	DFCCIL Requirement
2	IOH	Technical Requirement
3	Flood	Natural
4	National Holiday (15 th Aug, 2 nd Oct. and 26 th Jan)	Statutory
5	Force Majeure conditions	Force Majeure
6	No block	DFCCIL
7	Breakdown of RBMV	Contractor
8	Working days lost on account of attending breakdown of RBMV	Contractor
9	Non availability of Executive of Civil, S&T and LP/ALP or other DFCCIL staff essential for machine working/shifting/ movement.	DFCCIL
10	No/less staff at machine	Contractor
11	Accident on DFCCIL / Road user /trespasser / contractor account	As per joint inquiry report
12	SPAD (Signal passing at danger position by Machine Operator)	Contractor

- 1.13 The contractor will offer RBMV for working to DFCCIL. If the RBMV is not able to work on account of any reason, it will be recorded jointly by contractor's representative and authorized DFCCIL staff. The progress will be monitored on a Half yearly basis. The RBMV will be considered as available if days are lost on account of natural reasons (i.e like heavy rains etc), statutory reasons, force majeure conditions, derailment (on account of DFCCIL) and other DFCCIL accounts. In every month, 25 days are estimated to be working day (including Sundays). The balance days are meant for maintenance functions during which time all maintenance activities are to be completed by the tenderer. No penalty will be levied on the contractor for loss of working days on account of DFCCIL, technical requirement, natural reasons, statutory reasons and Force Majeure conditions. If RBMV is not available for a minimum of 75 days in 3 months (Month will start from date of actual commencement of O & M work) on O & M contractor account, the payment of item No. 1 of Schedule A of SOR will be reduced proportionally and the penalty certificate will be rendered (as per enclosed **Annexure-II**). For example, if the machine is available for only **73** days, the reduced payment will be = $(73/75) \times$ the monthly payment shown in SOR item No. 1 of Schedule A of SOR. In case in contractor has made availability of RBMV for more than 75 days in subsequent quarter, then recovery already deducted in previous 3 months will be returned back for no of days in excess of 75 days. This adjustment will be made on a quarterly basis.

1.14 Requirement of Track machine staff

- 1.14.1 The contractor will provide competent staff for the operation and maintenance of RBMV.

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Contractor's operators, Technicians and helpers shall be of sound physical and mental health and shall not be more than 65 years of age

- 1.14.2 The O & M Contractor has to provide sufficient number of skilled/semi-skilled staff required for RBMV (Minimum 5 staff including 1 supervisor cum operator, 1 Operator, 1 Technician and 2 Helpers at a time required, for operation and maintenance of RBMV).
- 1.14.3 The Supervisor cum Operator one should be Graduate Engineer in Civil/Mechanical/Electrical/Industrial Engineering having overall working experience of minimum 8 years and other operator should be at least Diploma in Mechanical/Production/Industrial/Automobile/Electrical/Electronics/Instrumentation Engg. However, if operator is having more than 10 years of working experience in Indian Railway as JE/SSE/TMC, the above educational qualification will be exempted, and such operators will be deemed to have requisite educational qualification.
- 1.14.4 Technicians should be minimum ITI in nay trade. However, if Technician is having more than 10 years of working experience in Indian Railway as Technician, the above educational qualification will be exempted, and such operators will be deemed to have requisite educational qualification.
- 1.14.5 Contractor's helpers should have minimum educational qualification of metric (10th pass).
- 1.14.6 All RBMV operators shall have valid competency certificate in train operation (G & S R) issued by HHI/Noida and medically fit in A-3 Category at all times during the currency of the contract. In case the initial/refresher course to be done for G & SR from HHI/Noida during the currency of this contract, the same shall be got done for the operators by the contractor and it shall payable as applicable. DFCCIL shall facilitate expediting the process. All the operators shall have valid PME certificate issued by Authorized Doctors of DFCCIL and all the Cost for medical examination connected with PME, shall be payable by the O & M Contractor.
- 1.14.7 Contractor's Technicians and Helpers shall be fit in A-3 medical category at all times during the currency of the contract. The classification of A-3 will be as per rules of Indian Railways. Contractor's staff will be required to undertake Periodical Medical Examination (PME) at designated hospitals of DFCCIL as per provisions of Indian Railway Track Machine Manual and G&SR.
- 1.14.8 If staff is less than the agreed scale of staff, penalty as under will be imposed

Operator - Rs. 5000/per day
Technician - Rs. 3000/per day
Helper - 2000/per day

Above penalty duly updated for PVC applicable for Item No.1 of Schedule A of SOR but this provision will not be applicable during Occasional shortage (two instances in a year, with each instance lasting not more than 7 days) of staff, provided overall strength of machine operator & technician remain more than 70% of agreed strength in respective category.

- 1.14.9 The contractor shall factor in requirement of working hours, occasional extended working hours, workload and required progress, leave, weekly off, sickness of staff, labour laws, holidays, training, refresher courses, periodical medical examination, maintenance requirement of RBMV etc. while working out staff cost. Contractor will maintain the agreed scale of RBMV staff in each category during execution of work. O & M Contractor is advised to deploy multi-skilled operators capable and competent to operate and maintain RBMV and allied equipment's.

1.15 Competency and Training of Contractor's Operators, Technicians and Helpers:

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- 1.15.1 Before deputing its staff for movement/operation/working of track machines, Contractor shall impart the necessary training to its operators and obtain competency certificate from DFCCIL. Before issuing Competency Certificates, DFCCIL will check the knowledge of contractor's operating staff and only after satisfying himself, shall issue the competency certificate. DFCCIL G & SR training will be provided by DFCCIL. However, Boarding, lodging, transportation to training premise/site will be borne by contractor. In case, contractor imparts technical training at OEM's premises, entire cost of such training shall be borne by the contractor.
- 1.15.2 Before deputing its staff for movement/operation/working of track machines, Contractor shall impart the necessary training to its Technicians.
- 1.15.3 The track machine staff deployed by the contractor will fulfill the required age, educational, training and medical criteria as mentioned above. Only those contractors' operators having valid competence certificate issued by DFCCIL will be authorized to operate and work the track machines. Before issue of competency certificate by DFCCIL, the track machine staff will fulfill all the criteria regarding age, educational qualification, training (technical & Safety) and medical fitness.
- 1.15.4 If actual working performance of any track machine staff of contractor is found not satisfactory or staff reports for duty in intoxicated state or indulged in indiscipline or continuous disregard of DFCCIL instruction or creating unsafe conditions towards working/operating of track machines/running of trains, concerned Dy.CPM/DFCCIL will be authorized to immediately demobilize the defaulting staff. Dy.CPM/DFCCIL will give a notice to this effect to the contractor and the contractor will demobilize the defaulting staff as directed (immediately or within given time period). The contractor will also provide replacement for which a grace period of one month from the date of serving the notice to the contractor will be provided. The resulting shortage of staff including penalty will be dealt with as detailed in subsequent sub-paras.
- 1.16 The RBMV will work on DFCCIL with the trains running on adjacent tracks. The contractor must ensure the care /safety/health hazards of the labors engaged by him/her during the course of the execution of work. Necessary safety staff/look out men/hand signal men/hooter men etc will be provided by the DFCCIL. O & M Contractor should organize regular safety camps/safety drills, including fire safety drills, at least once a month and maintain necessary record. DFCCIL supervisors and officers may also be invited to counsel the staff with regard to safety of track, train and Workmen.
- 1.17 DFCCIL shall provide route learning to contractor's track machine operators in a similar manner as applicable to DFCCIL track machine operators. No charge will be levied by DFCCIL from the contractor. For movement from DFCCIL to IR and back to DFCCIL from one work site to new work site and to/from IOH, assistance of ALP/LP is provided by DFCCIL without any extra cost.
- 1.18 The DFCCIL shall depute an authorized representative for the supervision of the site where the work is to be carried out by the track machine. He will also offer the machine to section control for movement and /or working. He will also submit the demand of traffic block to section control, coordinate with traffic control for timely and adequate traffic block, will accept traffic block and will clear the traffic block. No payment will be charged by DFCCIL for such supervisors. Supervisors of the electrical, S&T and traffic department will also be deputed by DFCCIL at its own cost wherever required.
- 1.19 **Siding-** For stabling and repair/maintenance of RBMV track will be provided by DFCCIL free of charge. The arrangements for security of RBMV shall be made by the Contractor at his own expense. Water & electric supply will be provided by DFC free of cost.

1.20 Accommodation of staff:

- 1.20.1 The accommodation facility for accommodating Manpower deployed by O & M

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contractor. has to be arranged by him at his own cost.. The Contractor shall arrange the timely transportation of his employees from their places of accommodation to the track machine stabling siding and back at his own cost

1.21 Compensation in case of short closure of contract on DFCCIL Account

In case, DFCCIL doesn't want to continue the contract due to no scope, due to shortage of funds, or due to other reasons not attributable to contractor (except Force Majeure conditions), the contract may be short closed by giving notice of one month to the contractor. In case, on account claims of contractor are not cleared within 180 days from receipt of claims, contractor will have the option for short closing the contract at the expiry of 180-day period, by giving one month notice to DFCCIL to this effect. Till 30 days from giving such notice of short closure, the contractor will be bound to execute the contract at agreed rates, terms and contract. In case of short closure of contract by DFCCIL or by contractor in the above circumstance, contractor will be entitled for following compensation after handing over RBMV to DFCCIL:

- a) All O & M works 'done as per contract agreement but not paid' will be paid.
- b) Performance Guarantee available with DFCCIL will be returned.
- c) The cost of spares **purchased** by Contractor for maintenance of RBMVs on production of actual purchase bills and the Spares will become property of DFCCIL along with 10% Overhead and profit on that.
- d) Rs. 1,00,000/- for demobilization of human resources.

1.22 Termination/short closure on other than DFCCIL account

- 1.22.1 In case of termination of O & M contract on Contractor Account no compensation, payments will be made, except payments for works already done conforming to contract agreement. In case of termination on contractor account, Security deposit (SD) and Performance Guarantee (PG) will also be forfeited in terms of contract agreement.
- 1.22.2 In case of persistent Force-Majeure conditions, contract may be short closed with the consent of both parties and without financial liabilities on either side. In such cases, no compensation payments will be made, due payments for works already done conforming to the contract agreement will be cleared and available SD & PG will be released.
- 1.22.3 In case of termination on Contractor Account/short closure in case of persistent Force-Majeure conditions, the Contractor will remove all his establishment, materials, offices from DFCCIL premises, within 30 days, after which Penalty @ Rs.10000/per day/location will be levied. In case the premises are not vacated within 90 days DFCCIL shall have the right to take custody of all properties and equipment and dispose it as it deems fit.

1.23 Infringement of patents

The O & M Contractor is forbidden to use any patents or registered drawings, process or pattern in fulfilling his contract without the previous consent in writing of the owner of such patent, drawing, pattern or trademark, except where these are specified by the DFCCIL. Royalties where payable for the use of such patented processes, registered drawings of patterns shall be borne exclusively by the Contractor. The O & M Contractor shall advise the DFCCIL of any proprietary right that may exist on such processed drawings or patterns which he may use of his own accord.

1.24 Safety Measures

- 1.24.1 The O & M contractor shall take all precautionary measures in order to ensure the protection of his own personnel moving around or working in the DFCCIL premises, but shall then conform to the rules and regulations of the DFCCIL if and when, in the course

of the work there is likely to be any danger to persons in the employment of the contractor due to running traffic while working in the DFCCIL siding and premises (i.e. all situations except during the actual working under block), the contractor shall provide flagman or look out men for protection of such persons. The DFCCIL shall remain indemnified by the contractor in the event of any accident occurring in the normal course of work, arising out of the failure of contractor or his men to exercise reasonable precaution at all places of work. All the works under the contract shall be carried out under the supervision of competent DFCCIL supervisor/staff. The format of the Competency certificate of Safety provisions is enclose as **Annexure-III**.

1.24.2 The contractor shall abide by all DFCCIL regulations in force for the time being and ensure that the same are followed by his representatives or subcontractors or workmen. He shall give due notice to his employees and workers about provision of this para.

1.24.3 Detailed safety measures to be adhered are mentioned in the **Annexure-I**.

1.24.4 It may also be noted that works must be carried out most carefully without any infringement of the Indian Railway Act or the General and Subsidiary Rules in force on the Railway/DFCCIL, in such a way that they do not hinder Railway/DFCCIL operation or affect the proper functioning of or damage any Railway/DFCCIL equipment, structure or rolling stock except as agreed to by the employer.

1.25 Change in law

1.17.1 "The contract price shall be adjusted to take account of any increase and decrease in cost after the bid submission date resulting from:

- a. A change in the law of the Government of India (including the introduction of new laws and the repeal or modification of existing laws): or
- b. In the Judicial or official government interpretation of such laws, or
- c. The commencement of any Indian law which has not entered into effect until the bid submission date; or
- d. Any change in the rates of any of the taxes or introduction of new taxes, duties, levies, cess etc. on supply of materials and services that have a direct effect on the works.

Which affects the contractor in the performance of obligation under the contract.

1.17.2 Further if as a result of change in law as stated in clause No. 1.17.1 above, interpretation, or rates of taxes, the contractor benefits from any reduction in the cost for the execution of this contract, save and except as expressly provided for this sub-clause or in accordance with the provisions of this contract, the contractor shall, within 28 days from the date he becomes reasonably aware of such reduction in the cost, notify the employer of such reduction in cost."

1.18 EXPENSES DURING SHIFTING OF MACHINE

In case DFCCIL is shifting machine from one section to another section of DFCCIL, cost of HSD required in transit are to be born by DFCCIL. The days taken for the shifting of machine will be considered as availability for the purpose of counting 75 days in a quarter.

1.19 Payment

Payment will be governed by the terms specified in RFP and in accordance with the accepted schedule of prices, read with relevant para of the other parts of the contract. The DFCCIL retains the right to withhold money due to the contractor arising out of this contract for any default of the contractor.

1.20 IPR Rights

All deliverables, outputs, plans, drawings, specifications, designs, reports, and other documents and software submitted by the contractor under this Contract shall become and remain the property of the DFCCIL and subject to laws of copyright and must not be shared with third parties or reproduced, whether in whole or part, without the DFCCIL's prior written consent. The O & M contractor shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to the DFCCIL, together with a detailed inventory thereof. The O & M contractor may retain a copy of such documents and software but shall not use it for any commercial purpose.

1.21 Confidentiality

All documents, drawings, samples, data, associated correspondence or other information furnished by or on behalf of the DFCCIL to the contractor, in connection with the contract, whether such information has been furnished before, during or following completion or termination of the contract, are confidential and shall remain the property of the DFCCIL and shall not, without the prior written consent of DFCCIL neither be divulged by the O & M contractor to any third party, nor be used by him for any purpose other than the design, procurement, or other services and work required for the performance of this Contract. If advised by DFCCIL, all copies of all such information in original shall be returned on completion of the contractor's performance and obligations under this contract.

1.22 Insurances

- 1.22.1 The contractor (a) shall take out and maintain, at its own cost (except as indicated in 1.22.2) on terms and conditions approved by the DFCCIL, insurance against the risks, and for the coverage, as stipulated in the contract or any applicable law and shall provide, within 90 days of the issuance of the LOA, evidence to the DFCCIL showing that such insurance has been taken out and maintained and that the current premiums have been paid. Contractor shall be the Insuring party. DFCCIL shall be a beneficiary unless mentioned otherwise in this clause. The cost incurred for procuring any insurance policy of RBMV shall be reimbursed by DFCCIL with 15 days of producing the insurance premium receipt.
- 1.22.2 The cost incurred for procuring any insurance policy of RBMV shall be reimbursed by DFCCIL with 15 days of producing the insurance premium receipt. The contractor at DFCCIL cost shall provide, in the joint names of the DFCCIL and the O & M contractor, insurance cover from the start date to the date of completion of the contract for the following events which are due to the contractor's risks:

Loss including loss due to theft of or damage, including vandalism, to Machines all Equipment, machine tools, materials including Spares – Value covering the full reinstatement cost.

- 1.22.3 Insurance policies and certificates for insurance shall be delivered to the DFCCIL in original for scrutiny and In case, as a result of DFCCIL scrutiny, the policies are adjudged to be not covering the above-mentioned risks, Contractor shall be under obligation, to take additional coverage or for due modification in Insurance policy, at their own cost. All such insurance shall provide compensation payable in Indian Rupees to rectify the loss or damage incurred. Any Alterations to the terms of insurance shall not be made without the approval of the Engineer. Both parties shall comply with any conditions of the insurance policies.
- 1.22.4 Contractor before taking any kind of insurance will take written permission from DFCCIL regarding which components of the machine are to be insured. After written permission from DFCCIL, contractor will be authorized to take out and maintain the insurance.

Chapter – VII

TENDER FORMS AND ANNEXURES (including schedule of prices)

Signature of tenderer (s)
With seal

Chapter- VII

TENDER FORMS

FORM No.	SUBJECT
Form - 1	Offer Letter
Form - 2	Tenderer's Credentials
Form - 2A	Technical Eligibility Criteria Details
Form - 2B	Financial Eligibility Criteria Details
Form - 2C	Applicant's Party Information Form
Form - 3	Summary of prices
Form – 3A	Details of Various spare parts and Consumables of MC along with rate
Form - 4	Schedule of Rates (SOR) and Total Prices
Form - 5	Bid Deposit
Form - 6	Bid Security Exception Declaration
Form - 7	Performance Guarantee Bond
Form - 8	ECS / NEFT / RTGS Form
Form - 9	Power of Attorney for authorized signatory of Single Entity
Form - 10	Draft MOU for Joint Venture Participation
Form - 11	Draft Agreement of JV
Form - 12	Pro-forma of Participation from each partner of JV
Form - 13	Power of Attorney for authorized signatory of JV partners
Form - 14	Power of Attorney to lead partner of JV
Form - 15 (IP)	Format of Pre contract Integrity Pact
Form - 16	Anti-profiteering declaration
Form -17	Format for certificate to be submitted/upload by tenderer along with the tender documents
Form – 18(MII)	Make in India Policy of Gol
Form -19	Certificate of Responsiveness of Bid.
Form - 20	Format of Contract Agreement
Form -21	Performa for Time Extension
Form - 22	Certificate of fitness
Form -23	Performa of 7 days' Notice
Form -24	Performa of 48 Hours' Notice
Form - 25	Performa of termination notice
Form - 26	Final Supplementary Agreement
Form - 27	Standing indemnity bond for on account payment
Annexure-I	Detailed safety measures
Annexure-II	Quarterly Availability Certificate
Annexure-III	Competency Certificate

Signature of tenderer (s)
With seal

OFFER LETTER

Tender Notice No. _____

Name of Work: _____

.To,

Chief General Manager

Office of Chief General Manager, Dedicated Freight Corridor
 Corporation of India Ltd, 2nd floor, DFCC Operation Control Center,
 Subedarganj (Opposite IOCL campus), Prayagraj – 211012, Uttar
 Pradesh, India.

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda.
- (b) We offer to execute the O & M Works in conformity with the Bidding Documents.
- (c) Our bid shall be valid for a period of 90 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) We have not been blacklisted/banned in accordance with para.1.3.13 (ii) of Preamble and General Instructions to tenderers.
- (e) We are neither Bankrupt/Insolvent nor in the process of winding-up nor there is a case pending before any Court on deadline of submission of the Bid in accordance with para. 1.3.13 (ii) of Preamble and General Instructions to tenderers.
- (f) If our bid is accepted, we commit to obtaining a Performance Guarantee in accordance with the Bidding Documents.
- (g) If our bid is accepted, we commit to deploy key equipment and key personnel consistent with the requirements of the work.
- (h) We understand that this bid, together with your written acceptance thereof included in your notification of award/Letter of Acceptance (LOA), shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (i) All information, statements and description in this bid are in all respect true, correct and complete to the best of our knowledge and belief and we have not made any tampering or changes in the bidding documents on which the bid is being submitted and if any tampering or changes/incorrect information are detected at any stage, we understand the bid will invite summarily rejection and forfeiture of bid security, the contract will be liable to be terminated along with forfeiture of performance security, even if LOA has been issued.
- (j) We understand that you are not bound to accept the lowest bid or any other bid that you may receive.

Name.....In the capacity of.....
 Signed.....Duly authorized to sign
 the Bid for and on behalf of..... Date

Signature of tenderer (s)
 With seal

TENDERER'S CREDENTIALS

S. No	Description
1.	For technical experience/competence, give details of work done during the last five financial years and current year in the Performa given in Form-2A
2.	For financial capacity and organizational resources, give details of contractual payments received for the last three financial years (i.e. current Financial year and three previous financial years) as per audited balance sheet certified by Chartered Accountant in the Performa given in Form-2B
3.	Give the constitution of your firm. Attach certified copies of legal documents in support thereof. Form-2C

TECHNICAL ELIGIBILITY CRITERIA

Details of the Technical Experience (Eligible Project) **Credential**
(as per Para 1.3.13 (i) (f) of Preamble and General Instruction to Tenders)

Contract No.		
Detail Description of work		
Award date		
Completion date		
Role in Contract		[Prime Contractor or Member in JV]
Total Contract Amount (Rs.)		
If member in a JV, Specify participation in total contract amount	[insert a percentage amount]	Total contract amount in Rs.
Total work done value year wise of technical work done	Of Contract as whole	Share of Member in case of JV/partnership Firm
FY -2019-2020		
FY -2020-2021		
FY -2021-2022		
FY -2022-2023		
FY -2023-2024		
Current Financial Year (upto month previous to tender opening month)		
Employer's Name:		
Address:		
Telephone/Fax number		
E-Mail:		
Description of the Eligible Projects in accordance with Criteria 1.3.13 (i) (A) (f)		

Note:-

1. Form 2A is to be submitted separately for all Eligible Projects for which the bidder is claiming credential.
2. The Bidder shall attach certified Eligible Projects certificates / certified copy of work done payments issued by clients of all Eligible Projects for which the bidder is claiming credential.
3. In case above documents clearly showing the amount of work done Eligible Projects anywhere in railway sector in any country of the world are not submitted by the bidder at the time of submission of his bid, his bid will be evaluated ignoring that credential.

**Name and Signature of Bidder
along with round Stamp**

Signature of tenderer (s)
With seal

FINANCIAL ELIGIBILITY CRITERIA DETAILS
(as per Para 1.3.13 (ii) of Preamble and General Instruction to Tenders)

NAME OF BIDDER/JV PARTNER:

Annual Contractual Turnover Data for the Previous 3/4 Years (Contractual Payment only)			
Year	Amount Currency	Exchange Rate	Indian National Rupees Equivalent
Average Annual Contractual Turnover for the last 3 years			

1. The average annual contractual turnover shall be calculated as an average of "total contractual payments" in the previous three financial years. However, in case the balance sheet of the previous year is yet to be prepared/ audited, the audited balance sheet of the fourth previous year shall be considered for calculating average annual contractual turnover.
2. The information supplied shall be substantiated by data in the audited balance sheets and profit and loss accounts for the relevant years in respect of the bidder or all members constituting the bidder.
3. Contents of this form should be certified by a Chartered Accountant duly supported by Audited Balance Sheet duly certified by the Chartered Accountant.

SEAL AND SIGNATURE OF THE BIDDER

Certified that all figures and facts submitted in this form have been furnished after full consideration of all observations/notes in Auditor's reports. _____

(Signature of Chartered Accountant)

Name of CA: _____

Registration No: _____

(Seal)

Note: **Each Bidder or each member of a JV must fill in this form separately:**

APPLICANT'S PARTY INFORMATION FORM

Bidder Company/Firm Name:
Country of registration of Company/Firm:
Year of constitution of Company/Firm:
Company/Firm legal address in country of constitution:
Company/Firm authorized representative information Name:
Address: <i>[insert street/ number/ town or city/ country]</i>
Telephone/Fax numbers:
E-mail address:
<p>➤ Following documents are to be attached:</p> <ul style="list-style-type: none"> a. Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above. b. In case of a government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status. c. Copy of PAN card of Bidder firm. d. The authenticated copy of registered partnership deed and registration of the firm from registrar of firm in case of partnership firm if applicable). e. In case of proprietorship firm bidder will submit an affidavit, attested by Notary Public that "I am a sole proprietor of the firm in on Non judicial stamp paper of Rs 500/-. f. Bidder's profile duly filled in, as per tender document. g. Power of Attorney for signing the Application. If applicable, the Power of Attorney for Lead Member of JV; h. Article of association and memorandum in case of private/public limited company. i. Copy of E.P.F. registration. (optional) j. Copy of ESI Certificate. (optional) k. Copy of GST registration no. <p>➤ Organizational chart, a list of Board of Directors, and the beneficial ownership.</p>

**Name and Signature of Bidder
along with round Stamp**

SUMMARY OF PRICES

Name of Work: Operation & Maintenance of DFCCIL's 8 nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.

RATE SHEET

I/we hereby agree and abide to do the work as below:

Sl. No.	Schedule Names as per SOR	Amount of Schedules as per Form - 4 of RFP	Quoted cost wrt to Advertised tender costs of each schedule	Remarks
1	Schedule A (For Manpower for Operation and Maintenance of DFCCIL's RBMVs)	₹ 14,81,26,320.00	% Above/Below/At par by Bidder	Rates to be quoted in online mode only.
2	Schedule B (For Supply of Consumables of RBMVs)	₹ 2,88,50,356.85	% Above/Below/At par by Bidder	
TOTAL Operation & Maintenance of DFCCIL's RBMVs including supply of consumables for 3 Years within DFCCIL Network. = Rs.----- (including GST of 18%)				

*** Tenderer should bear the fact in mind while quoting the rates that GST will be paid by Contractor as per the prevailing rate as applicable. Documentary evidence of deposition of GST will be produced by contractor.**

Notes:

- (i) The above prices are inclusive of duties, levies, etc. and 18% GST.
- a) **GST** as applicable from time to time on taxable value of each running account bill **shall be paid by Contractor for further deposition of GST to State Govt. and/or Central Govt.** as applicable. Documentary evidence of deposition of GST will be produced by contractor.
- b) The contractor should adhere to **Anti Profiteering Provisions** (in **Form-17**) as per section 171 of the CGST Act. Where due to a change in the rates of GST / Change in law, the contractor gets any credits / benefits, the same shall be passed on to DFCCIL by way of reduction in prices.
- (ii) The tenderer should quote single percentage above / at par / below for each schedule.
- (iii) If the uniform percentage quoted by the Tenderer does not clearly indicate whether the rates are above/at par/below the estimated rates, then through sign convention it will be considered to be on plus side and evaluated accordingly.
- (iv) **This form shall be submitted by the contractor only along with the financial bid and shall not be submitted along with the technical bid.**

(Refer Note No. (v) of item No.2 of SOR)

(Details of all items of main heads (Head wise) mentioned in item No.1 of Schedule -B of SOR for O & M of RBMV)

SN	Main Head as mentioned in item No 1.3.18.1 of ITT	OEM Part No as per OEM part catalogue	OEM Part Description as mentioned in OEM part catalogue	Brand/Make of Item	Unit	Unit Cost without GST	% GST rate	Proposed Index for calculating PVC
1	2	3	4	5	6	7	8	9

Note:

- This form shall be submitted by the contractor only along with the financial bid and shall not be submitted along with the technical bid.**

FORM No. 4

SCHEDULE OF RATES (SOR) & TOTAL PRICE

Name of Work: Operation & Maintenance of DFCCIL's 8 nos. of RBMVs including supply of consumables for 3 Years within EDFC Network.

Item No.	Description of Item	Unit	Qty.	Unit Rates in Rs. (Incl. 18% GST/Tax)	Amount in Rs. (Incl. 18% GST/Tax)	
Schedule A (For Manpower for Operation and Maintenance of RBMV)						
1	Manpower: Operation & Comprehensive Maintenance of DFCCIL RBMVs supplied by M/s Phooltas Transrail Limited, Patna, India working on EDFC	Months	240	₹ 6,17,193.00	₹ 14,81,26,320.00	
Schedule B (For Supply of Consumables)						
Item No.	Description of Item	Unit	Qty	Unit Rates in Rs. (Incl 18% GST/Tax)	Amount in Rs. (Incl 18% GST/Tax)	Remarks
1	Lump Sum Cost of all required consumables (excluding HSD oil) during full contract duration, required for RBMVs supplied by M/s Phooltas Transrail Limited, Patna, India.		(Lumpsum)		₹ 2,88,50,356.85	The various details of consumables as desired in Form No. 3A are to be submitted by Bidders along with financial offer as per Note No. (v) of Item No.2 of SOR (Chapter-III). The payment will be made as per actual consumption and at accepted rates submitted by bidder vide Form No. 3A of RFP.
TOTAL OF Schedule (A + B) incl 18% GST					₹ 17,69,76,676.85	

* Tenderer should quote % above/below/at par for schedule "A", and at par for schedule "B".

** Tenderer should bear the fact in mind while quoting the rates that GST will be paid by Contractor as per prevailing rate as applicable. Documentary evidence of deposition of GST will be produced by contractor.

Important Notes in connection of items of Schedule B of SOR:

- WPI Index No. and Index Name of each shall be mentioned by Bidder for cost escalation purposes.
- In case, and Zonal Railway of Indian Railway issue any purchase order of some consumable required for Indian Railway Track whose brand, make and type is same as mentioned OEM parts catalog of the DFCCIL's to selected Bidder or any other vendor of this tender after award of this work even then payment to selected bidder of this tender will be made as per accepted rate of purchase order (PO)/Rate Contract LOA/AMC LOA issued by Zonal Railways of the accepted rate of this tender whichever is lowest. Priority of selection of rate will be in order Northern Railway, Western Railway, Central Railway, East Central Railway, North Central Railway, other Zonal Railways).

Signature of tenderer (s)
With seal

Performa of Bid Security/EMD BG

Bank Guarantee Bond from any scheduled commercial bank of India
(On non-judicial stamp paper, which should be in the name of the Executing Bank).

.....**Bank's Name, and Address of Issuing Branch or Office**.....

Beneficiary: Dedicated Freight Corridor Corporation of India Limited.

Date:.....

Bank Guarantee Bond No.:

Date:-----

..... **(Designation & address of Contract Signing Authority)**, Dedicated Freight Corridor Corporation of India Limited (herein called "**the Employer**") having invited the bid for ----- through Notice inviting tender (NIT) No. -----, We have been informed that. **[Insert name of the Bidder]** ----- (**hereinafter called "the Bidder"**) Intends to submit its bid (hereinafter called "the **Bid**").

WHEREAS, the Bidder is required to furnish Bid Security for the sum of **[Insert required Value of Bid Security]**, in the form of Bank Guarantee, according to conditions of Bid.

AND

WHEREAS,..... **[Insert Name of the Bank]**, with its Branch **[Insert Address]** having its Headquarters office at..... **[Insert Address]**, hereinafter called the **Bank**, acting through **[Insert Name and Designation of the authorized persons of the Bank]**, have, at the request of the Bidder, agreed to give guarantee for Bid Security as hereinafter contained, in favour of the Employer:

1. KNOW ALL MEN that by these present that I/We the undersigned **[Insert name(s) of authorized representatives of the Bank]**, being fully authorized to sign and incur obligations for and on behalf of the Bank, confirm that the Bank, hereby, unconditionally and irrevocably guarantee to pay to the Employer full amount in the sum of **[Insert required Value of Bid Security]** as above stated.
2. The Bank undertakes to immediately pay on presentation of demand by the Employer any amount up to and including aforementioned full amount without any demur, reservation or recourse. Any such demand made by the Employer on the Bank shall be final, conclusive and binding, absolute and unequivocal on the Bank notwithstanding any disputes raised/ pending before any Court, Tribunal, Arbitration or any Authority or any threatened litigation by the Bidder or Bank.
3. The Bank shall pay the amount as demanded immediately on presentation of the demand by Employer without any reference to the Bidder and without the Employer being required to show grounds or give reasons for its demand of the amount so demanded.
4. The guarantee hereinbefore shall not be affected by any change in the constitution of the Bank or in the constitution of the Bidder.
5. The Bank agrees that no change, addition, modifications to the terms of the Bid document or to any documents, which have been or may be made between the Employer and the Bidder, will in any way absolve the Bank from the liability under this

Signature of tenderer (s)
With seal

guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification made by Employer at any time.

6. This guarantee will remain invalid and effective from[insert date of issue] till[insert date, which should be minimum (90 days beyond the expiry of validity of Bid)]. Any demand in respect of this Guarantee should reach the Bank within the validity period of Bid Security/Maintenance period plus 60 days.
7. The Bank Guarantee is unconditional and irrevocable.
8. The expressions Bank and Employer herein before used shall include their respective successors and assigns.
9. The Bank hereby undertakes not to revoke the guarantee during its currency, except with the previous consent in writing of the Employer. This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No.758.
10. The Bank hereby confirms that it is on the SFMS (Structured Financial Messaging System) and shall invariably send the advice of this Bank Guarantee to the following bank details –

IFSC CODE	
IFSC TYPE	
BANK NAME	
BRANCH NAME	
CITY NAME	
ADDRESS	
DISTRICT	
STATE	
BG ENABLED	

11. The Guarantee shall be valid in addition to and without prejudice to any other security Guarantee(s) of Bidder in favour of the Employer. The Bank, under this Guarantee, shall be deemed as Principal Debtor of the Employer.

Date.....

Place.....

signature(s)

Bank's Seal and authorized

[Name in Block letters].....

[Designation with Code No.].....

[P/Attorney] No.

Witness:

Signature of tenderer (s)
With seal

1 Signature, Name & Address & Seal

2 Signature, Name & address & Seal
Bank's Seal

[P/Attorney] No.

Note: All the italicized text is for guidance on how to prepare this bank guarantee and shall be deleted from the final document.

Bid Security Exemption Declaration

[Ref clause 1.3.29.1 of ITT]

(To be executed on non-judicial stamp paper notarized)

(Bid Securing Declaration In lieu of bid security in the following is applicable only to the Bidders exempted from submission of bid security)

Bidder's Name_____

[Address and Contact Details]

Bidder's NIT No.._____ Date.....

To

The President of India, acting through
Dedicated Freight Corridor Corporation of India Ltd. (DFCCIL-Client)
represented by CGM/PRYJ-W

We, the undersigned, solemnly declare that:

1. We understand that according to the conditions of this Tender Document, the bid must be supported by a Bid Securing Declaration In lieu of Bid Security.
2. We unconditionally accept the conditions of this Bid Securing Declaration. We understand we shall stand automatically suspended from being eligible for bidding in any tender in Client Organization for 2 years from the date of opening of this bid if we breach our obligation(s) under the tender conditions if we:
 - i) withdraw/ amend/ impair/ derogate, in any respect, from our bid, within the bid validity; or
 - ii) being notified within the bid validity of the acceptance of our bid by the Procuring Entity:
 - (a) refused to or failed to produce the original documents for scrutiny or the required Performance Security within the stipulated time under the conditions of the Tender Document.
 - (b) Fail or refuse to sign the contract.
3. We know that this bid-Securing Declaration shall expire if the contract is not awarded to us, upon:
 - i) receipt by us of your notification
 - (a) of cancellation of the entire tender process or rejection of all bids or
 - (b) of the name of the successful bidder or
 - ii) forty-five days after the expiration of bid validity, any extension to it.

(Signature with date)

(Name and designation)

Duly authorized to sign bid for and on behalf of.....

[name & address of Bidder and seal of company]

Dated on day of [insert date of signing]

Place.....[insert place of signing]

DA:.....

Signature of tenderer (s)

With seal

SAMPLE

Name of the Bank _____

Managing Director/ DFCCIL Bank Guarantee Bond No. _____

Acting through _____ (Designation Dated and address of contract signing authority)

PERFORMANCE GUARANTEE BOND

In consideration of the Managing Director / DFCCIL acting through Chief General Manager/DFCCIL/[Designation & Address of Contract Signing Authority], Dedicated Freight Corridor Corporation of India Limited hereinafter called "DFCCIL") having agreed under the terms and conditions of agreement/Contract Acceptance letter No. _____ dated _____ made between _____ (Designation & address of contract signing Authority) and _____ (hereinafter called "the said contractor(s)" for the work _____ (hereinafter called "the said agreement") having agreed for submission of an irrevocable _____ Bank Guarantee Bond for Rs. _____ (Rs. _____ Only) as a performance security Guarantee Bond from the contractor(s) for compliance of his obligations in accordance with the terms & conditions in the said agreement.

1. We (indicate the name of the Bank) hereinafter referred to as the Bank, undertake to pay to the Government an amount not exceeding Rs. _____ (Rs. _____ Only) on demand by the Government.
2. We _____ (indicate the name of the bank, further agree that (and promise) to pay the amounts due and payable under this guarantee without any demur merely on a demand from the Government through the Chief General Manager/ DFCCIL/----- or _____ (Designation & Address of contract signing authority) DFCCIL, stating that the amount claimed is due by way of loss or damage caused to or would be caused or suffered by the Government by reason of any breach by the said contractor of any of the terms or conditions contained in the said agreement or by reason of the contractor failure to perform the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rs. _____ Only)
- 3 (a) We, _____ (indicate the name of Bank) further undertake to pay to the Government any money so demanded notwithstanding any dispute or dispute raised by the contractor (s) in any suit or proceeding pending before any court or Tribunal relating to liability under this present being absolute and unequivocal.
- (b) The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment.
4. We, _____ (indicate the name of bank) to further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been

Signature of tenderer (s)
With seal

fully paid and its claims satisfied or discharged by _____ (Designation & Address of contract signing authority) on behalf of the Government, certify that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor (s) and accordingly discharges this guarantee.

5. (a) Notwithstanding anything to the contrary contained herein the liability of the bank under this guarantee will remain in force and effect until such time as this guarantee is discharged in writing by the Government or until (date of validity/extended validity) whichever is earlier and no claim shall be valid under this guarantee unless notice in writing thereof is given by the Government within validity/extended period of validity of guarantee from the date aforesaid.
- (b) Provided always that we _____ (indicate the name of the Bank) unconditionally undertakes to renew this guarantee to extend the period of guarantee form year to year before the expiry of the period or the extended period of the guarantee, as the case may be on being called upon to do so by the Government. If the guarantee is not renewed or the period extended on demand, we _____ (indicate the name of the Bank) shall pay the Government the full amount guarantee on demand and without demur.
6. We, _____ (indicate the name of Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without effecting in any manner out of obligations hereunder to vary any of the terms and conditions of the said contract from time to time or to postpone for any time or from time to time any to the powers exercisable by the Government against the said contractor (s) and to forbear or enforce any of the terms and conditions of the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor (s) or for any bearance act or omission on the part of the Government or any indulgence by the Government to the said contractor (s) or by any such matter or thing whatsoever which under the law relating to sureties for the said reservation would relive us from the liability.
7. This guarantee will not be discharged by any change in the constitution of the Bank or the Contractor (s).
8. We _____ (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the DFCCIL in writing.
9. This guarantee shall be valid upto _____ (Date of completion plus 60 days beyond that). Unless extend on demand by DFCCIL. Notwithstanding anything to the contrary contained herein before, our liability under this guarantee is restricted to Rs. _____ only) unless a demand under this guarantee is made on us in writing on or before we, shall be discharged from our liabilities under this guarantee thereafter.

Dated _____ The _____ day of _____ For _____
_____ (Indicate the name of bank)

Signature of Bank Authorize official
(Name):
Designation: Full
Address.

Witness:

1. _____

2. _____

**ECS / NEFT / RTGS
MANDATE FORM**

To,
CGM/PRYJ-W
DFCCIL/PRAYAGRAJ-W

Sub: ECS / NEFT / RTGS payments

We refer to the ECS / NEFT / RTGS set up by DFCCIL for remittance of our payments using RBI's NEFT / RTGS scheme, our payments may be made through the above scheme to our under noted account.

Name of Bank	
Name of City	
Bank Code No	
Name of Bank Branch	
Branch Code No	
Address of Bank Branch	
Telephone Number of Bank Branch	
Fax No of Bank Branch	
Name of customer / Tenderer as per account	
Account Number of Tenderer appearing on cheque book	
Type of Account (S. B. / Current / Cash credit)	
IFSC code for NEFT	
IFSC code for RTGS	
9-Digit-code number of the bank and branch appearing on the MICR cheque issued by the bank.	
Details of Cancelled Cheque leaf	
Telephone no of tenderer	
Cell Phone Number of the tenderer to whom details with regard to the status of bill submitted to Accounts Office i.e. Co6 & Co7 & Cheque Purchase Orders particulars can be intimated through SMS	
Tenderer's E - mail ID	

Confirmed by Bank signature of tenderer with stamp and address
Enclose a copy of crossed cheque

Power of Attorney for Authorized Signatory of Single Entity*(to be executed on non-judicial Stamp paper of appropriate value & Notarised)*

"Know all persons by these presents, we _____ do hereby constitute, appoint and authorize Mr/Ms _____ who is presently employed with us and holding the position of _____ & who is located at Address-----, as our **Authorized Representative** (our attorney), to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our submission of this Bid for O & M work of [Name of work to be mentioned by Bidder] vide NIT No. [NIT No need to be mentioned by Bidder] Including signing and submission of all documents and providing information/responses to Dedicated Freight Corridor Corporation of India Limited, representing us in all matters, dealing with Dedicated Freight Corridor Corporation of India Limited in all matters in connection with our Bid Submission till Contract is awarded. The Said Authorized representative shall continue to represent us (The Bidder and Contractor after award of the Works), during subsequent implementation of this Contract till the completion, in all respect, of the 'O&M Contract's Works during stipulated period of Completion or till revocation of this POA with the prior permission of the DFCCIL, as the case may be.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

We, in addition, unequivocally, certify that the Signatory of this Power of Attorney (POA) has been duly authorized by Our Board of Directors (BoD) to issue POA, such as this one.

Dated this the _____ day of _____ 200_____.

(Signature of Authorized Signatory)

(Signature and Name in Block letters of Signatory, Designation, Company, Cell number & E Mail ID) and Seal of Company

Witness

Witness 1:	Witness 2:
Name:	Name:
Address:	Address:
Occupation:	Occupation:
Cell no- E Mail ID	Cell no- E Mail ID

Notary Attestation
Notary Stamp & Signature

Notes: The extract from BoD minutes, conveying authorisation of the Authorised signatory [for issuing this POA] to issue the POA, such as this one, shall be attached along with this POA.

Signature of tenderer (s)
With seal
of 145

**DRAFT MEMORANDUM OF UNDERSTANDING
(MOU) For JOINT VENTURE PARTICIPATION
BETWEEN**

M/s Having its registered office at.....(Hereinafter referred to as.....) acting as the Lead Partner of the first part,

and

M/shaving its registered office at (Hereinafter referred to as `.....') in the capacity of a Joint Partner of the other part.

and

M/shaving its registered office at -----(Hereinafter Referred to as `-----') in the capacity of a Joint Partner of the other part.

The expressions of And Shall wherever the context admits, mean and include their respective legal representatives, successors-in-interest and assigns and shall collectively be referred to as "the Parties" and individually as "the Party"

WHEREAS:

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) [hereinafter referred to as "Client"] has invited bids for "[Insert name of work]... "

NOW, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. The following documents shall be deemed to form and be read and construed as an integral part of this MOU.
 - (i) Notice for Bid, and
 - (ii) Bidding document
 - (iii) Any Addendum/Corrigendum issued by Dedicated Freight Corridor Corporation of India Limited
 - (iv) The bid submitted on our behalf jointly by the Lead Partner.
2. The 'Parties' have studied the documents and have agreed to participate in submitting a 'bid' jointly.
3. M/sshall be the lead member of the JV for all intents and purpose and shall represent the Joint Venture in its dealing with the Client. For the purpose of submission of bid proposals, the parties agree to nominate As the leader duly authorized to sign and submit all documents and subsequent clarifications, if any, to the Client. However M/s..... shall not submit any such proposals, clarifications or commitments before securing the written clearance of the other partner which shall be expeditiously given by M/s.....to M/s.....
4. The 'Parties' have resolved that the distribution of responsibilities and their proportionate share in the Joint Venture is as under:
 - (a) Lead Partner;
 - (i)
 - (ii)

- (iii)
- (b) Joint Venture Partner
 - (i)
 - (ii)
 - (iii)

[Similar details to be given for each partner]

5. JOINT AND SEVERAL RESPONSIBILITIES

The Parties undertake that they shall be jointly and severally liable to the Client in the discharge of all the obligations and liabilities as per the contract with the Client and for the performance of contract awarded to their JV.

6. ASSIGNMENT AND THIRD PARTIES

The parties shall co-operate throughout the entire period of this MOU on the basis of exclusivity and neither of the Parties shall make arrangement or enter into agreement either directly or indirectly with any other party or group of parties on matters relating to the Project except with prior written consent of the other party.

7. EXECUTIVE AUTHORITY

The said Joint Venture through its authorized representative shall receive instructions, payments from the Client. The management structure for the project shall be prepared by mutual consultations to enable completion of project to quality requirements within permitted cost and time.

8. BID SECURITIES

Till the award of the work, JV firm/Lead Partner of JV firm shall furnish Bid Security to the Client on behalf of the joint venture which shall be legally binding on all the members of the Joint Venture.

9. BID SUBMISSION

Each Party shall bear its own cost and expenses for preparation and submission of the bid and all costs until conclusion of a contract with the Client for the Project. Common expenses shall be shared by all the parties in the ratio of their actual participation.

10. INDEMNITY

Each party hereto agrees to indemnify the other party against its respective parts in case of breach/default of the respective party of the contract works of any liabilities sustained by the Joint Venture.

- 11. For the execution of the respective portions of works, the parties shall make their own arrangements to bring the required finance, plants and equipment, materials, manpower and other resources.

12. DOCUMENTS & CONFIDENTIALITY

Each Party shall maintain in confidence and not use for any purpose related to the Project all commercial and technical information received or generated in the course of preparation and submission of the bid.

13. ARBITRATION

Any dispute, controversy or claim arising out of or relating to this agreement shall be

settled in the first instance amicably between the parties. If an amicable settlement cannot be reached as above, it will be settled by arbitration in accordance with the Indian Arbitration and Conciliation Act 1996 or any amendments thereof. The venue of the arbitration shall be Delhi.

14. VALIDITY

This Agreement shall remain in force till the occurrence of the earliest to occur of the following, unless by mutual consent, the Parties agree in writing to extend the validity for a further period.

- a. The bid submitted by the Joint Venture is declared unsuccessful, or
- b. Cancellation/ shelving of the Project by the client for any reasons prior to award of work
- c. Execution of detailed JV agreement by the parties, setting out detailed terms after award of work by the Client.

- 15.** This MOU is drawn in Number of copies with equal legal strength and status. One copy is held by M/s and the other by M/s..... &M/s And a copy submitted with the proposal.

- 16.** This MOU shall be construed under the laws of India.

17. NOTICES

Notices shall be given in writing by fax confirmed by registered mail or commercial courier to the following fax numbers and addresses:

Lead Partner
.....
(Name & Address)

Other Partner(s)
.....
(Name & Address)

IN WITNESS WHEREOF THE PARTIES, have executed this MOU the day, month and year first before written.

M/s.....
.....
(Seal)

M/s.....
.....
(Seal)

Witness

1.....(Name & Address)

2.....(Name & Address)

Notes: (1) In case of existing joint venture, the certified copy of JV Agreement may be furnished.

Signature of tenderer (s)
With seal

DRAFT FORMAT OF JOINT VENTURE AGREEMENT

To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.

The JV agreement shall be structured generally as per the contents list given below:

A. CONDITIONS AND TERMS OF JV AGREEMENT

1. Definitions and Interpretation
2. Joint Venture – Include Equity of members, transferability of shareholding of equity of a partner leaving during the subsistence of the contract.
3. Proposal Submission
4. Performance – To indicate scope of responsibility of each member
5. Language and Law
6. Exclusively
7. Executive Authority
8. Documents
9. Personnel
10. Assignment and Third Parties
11. Severability
12. Member in Default
13. Duration of the Agreement
14. 14 Liability and sharing of risks
15. Insurance
16. Sharing of Promotion and Project Costs, Profits, Losses and Remuneration
17. Financial Administration and Accounting
18. Guarantees and Bonds
19. Arbitration
20. Notices
21. Sole Agreement and Variation

B. SCHEDULES

1. Project and Agreement Particulars
2. Financial Administration Services
3. Allocation of the obligations
4. Financial Policy and Remuneration

Signature of tenderer (s)
With seal

PRO-FORMA LETTER OF PARTICIPATION FROM EACH PARTNER OF JOINT VENTURE (JV)

(To be executed on non-judicial stamp paper of appropriate value in accordance with relevant Stamp Act and to be registered with appropriate authority under Registration Act.)

No....
From:-----

Dated.....

To,
Chief General Manager/PRYJ-W
Dedicated Freight Corridor Corporation of India Limited
2nd Floor, OCC Building, Subedarganj, Prayagraj (U.P.)

Re: ... "[Insert name of work]... .."

Ref: Your NIT No..... Dated:-----

1. We wish to confirm that our company/firm has formed a Joint Venture with (i)..... & ii)..... For the purposes associated with IFB referred to above.

(Members who are not the lead partner of the JV should add the following paragraph).*

2. 'The JV is led by ... whom we hereby authorize to act on our behalf for the purposes of submission of Bid for and authorize to incur liabilities and receive instructions for and on behalf of any and all the partners or constituents of the Joint Venture.'

OR

*(Member(s) being the lead member of the group should add the following paragraph)**

2. 'In this group we act as leader and, for the purposes of applying for Bid, represent the Joint Venture:
3. In the event of our JV being awarded the contract, we agree to be jointly with i) & ii) (names of other members of our JV) and severally liable to the Dedicated Freight Corridor Corporation of India Limited, its successors and assigns for all obligations, duties and responsibilities arising from or imposed by the contract subsequently entered into between Dedicated Freight Corridor Corporation of India Limited and our JV.
4. ***I/We, further agree that entire execution of the contract shall be carried out exclusively through the lead partner.**

(Name of Signatory)
(Capacity of Signatory)
Company Seal

* Delete as applicable

Note: In case of existing joint venture, the certified copy of JV Agreement may be furnished.

Signature of tenderer (s)
With seal

**FORMAT FOR POWER OF ATTORNEY FOR AUTHORISED SIGNATORY OF
JOINT VENTURE (JV) PARTNERS**

POWER OF ATTORNEY*

***(To be executed on non-judicial stamp paper of the appropriate value in
accordance with relevant stamp Act. The stamp paper to be in the name of the
company who is issuing the power of Attorney)***

Know all men by these presents, we ... do hereby constitute, appoint and authorise Mr/Ms who is presently employed with us and holding the position ofas our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for the work of.....
Including signing and submission of all documents and providing information / responses to Dedicated Freight Corridor Corporation of India Limited, representing us in all matters, dealing with Dedicated Freight Corridor Corporation of India Limited in all matters in connection with our bid for the said project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

Dated this the day of 2023.

(Signature of authorised Signatory)

Signature of Lead Partner

Signature of JV Partner(s)

.....

.....

(Signature and Name in Block letters of Signatory)

Seal of Company

Witness

Witness 1:

Name:

Address:

Occupation:

Witness 2:

Name:

Address:

Occupation:

***Notes:**

- i) To be executed by all the partners jointly, in case of a Joint Venture.

**FORMAT FOR POWER OF ATTORNEY TO
LEAD PARTNER OF JOINT VENTURE (JV)**

(To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant stamp Act. The stamp paper to be in the name of the company who is issuing the power of Attorney)

POWER OF ATTORNEY*

Whereas Dedicated Freight Corridor Corporation of India Limited has invited Bids for the Operation & Maintenance of DFCCIL's 8 Nos of RBMV Machines including supply of consumables for 3 Years with in DFCCIL Network

Whereas, the members of the Joint Venture comprising of M/s. ..., M/s. ..., M/s....., and M/s. are interested in submission of bid for the work of ...*[Insert name of work]*... in accordance with the terms and conditions contained in the bidding documents.

Whereas, it is necessary for the members of the Joint Venture to designate one of them as the Lead Partner, with all necessary power and authority to do, for and on behalf of the Joint Venture, all acts, deeds and things as may be necessary in connection with the Joint Venture's bid for the project, as may be necessary in connection the Joint Venture's bid for the project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT:

We, M/s., hereby designate M/s., being one of the partners of the Joint Venture, as the lead partner of the Joint Venture, to do on behalf of the Joint Venture, all or any of the acts, deeds or things necessary or incidental to the Joint Venture's bid for the contract, including submission of bid, participating in conferences, responding to queries, submission of information/ documents and generally to represent the Joint Venture in all its dealings with the Railway / DFCCIL or any other Government Agency or any person, in connection with the Bid/contract for the said work until culmination of the process of bidding till the contract agreement if successful, is entered into with the Dedicated Freight Corridor Corporation of India Limited and thereafter till the expiry of the contract agreement.

**To be executed by all the members of the JV except the lead member.*

The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

We hereby agree to ratify all acts, deeds and things lawfully done by lead member, our said attorney, pursuant to this power of attorney and that all acts deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us/ Joint Venture.

Dated this the Day of..... 2023

.....
(Signature)

Signature of tenderer (s)
With seal

..... (Name in Block letters of
Executants) Seal of Company

Witness 1	
Name:	
Address:	
Occupation:	
Witness 2	
Name:	
Address:	
Occupation:	

Signature of tenderer (s)
With seal

PRE-CONTRACT INTEGRITY PACT**General**

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on-----day of the month of----- 20xx, between, on one hand, the DFCCIL acting through Shri ----- Designation of the officer, (hereinafter called the CLIENT, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First Part and M/s----- represented by Shri -----Chief Executive Officer (hereinafter called the "BIDDER/SELLER" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second part.

WHEREAS the CLIENT proposes to procure (Name of the Stores/Equipment/Item, Name of the Consultancy Service, Name of Works Contract, Name of Services) and the [A] is willing to Offer/has offered for stores or works.

WHEREAS the [A] is a private company/ public company/ Government undertaking/ partnership/ registered export agency, constituted in accordance with the relevant law in the matter and the CLIENT is a PSU performing its functions or behalf of the President of India.

NOW, THEREFOR,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling the CLIENT to obtain the desired said (Name of the Stores/Equipment/Item, Name of the Consultancy Service, Name of Works Contract, Name of Services) at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure [B] by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the CLIENT will commit to prevent corruption, in any form, by its Officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

Commitments of the CLIENT

- 1.0 The CLIENT undertakes that no official of the CLIENT, connected directly or indirectly with the [B], will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the [A] either for themselves or for any person, organization or third party related to the [B], in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the [B].

- 1.1 The CLIENT will, during the pre-contract stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular [A] in comparison to other BIDDERS.
- 1.2 All the officials of the CLIENT will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
2. In case any such preceding misconduct on the part of such official(s) is reported by the [A] to the CLIENT with full, and verifiable facts and the same is prima facie found to be correct by the CLIENT, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the CLIENT and such a person shall be debarred from further dealings related to the [B] process. In such [B] a case while an enquiry is being conducted by the CLIENT the proceedings under the [B] would not be stalled.

Commitments of BIDDERS

3. The [A] commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage) in order to secure the [B] contract or in furtherance to secure it and in particular commit itself to the following:-
 - 3.1 The [A] will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission fees, brokerage or inducement to any official of the CLIENT, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the [B] in exchange for any advantage in the bidding, evaluation, contracting and implementation of the [B].
 - 3.2 The [A] further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any Material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the CLIENT or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the [B] or any other [B] with the Government for showing or forbearing to show favour or disfavour to any person in relation to the [B] or any other [B] with the Government.
 - 3.3 * [A] shall disclose the name and address of agents and representatives and Indian [A] shall disclose their foreign principals or associates.

- 34 * [A] shall disclose the payments to be made by them to agents/brokers or any other intermediary, in connection with this bid/contract.
- 35 The [A] further confirms and declares to the CLIENT that the [A] is the original manufacturer/ integrator/ authorized government sponsored export entity of the defense stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the CLIENT or any of its functionaries, whether officially or unofficially to the award of the [B] to the [A] nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 36 The [A] either while presenting the bid or during pre-contract negotiations or before signing the [B] shall disclose any payments he has made, is committed to or intends to make to officials of the CLIENT or their family members, agents, brokers or any other intermediaries in connection with the [B] and the details of services agreed upon for such payments.
- 37 The [A] will not collude with other parties interested in the [B] to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the [B].
- 38 The [A] will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 39 The [A] shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the CLIENT as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The [A] also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10 The [A] commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The [A] shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the, [A] or any employee of the [A] or any person acting on behalf of the [A], either directly or Indirectly, is a relative of any of the officers of the CLIENT, or alternatively, if any relative of an officer of the CLIENT has financial.

Interest/stake in the Bidder's firm, the same shall be disclosed by the [A] at the time of filling of tender.

The term 'relative' for this purpose would be as defined in section 6 of the companies' act 1956.

- 3.13 The [A] shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the CLIENT.

4. Previous Transaction

- 4.1 The [A] declares that no previous transgression occurred in the last three years immediately before signing of this integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any public sector enterprise in India or any Government department in India that could justify BIDDER's from the tender process.

- 4.2 The [A] agrees that if it makes incorrect statement on this subject, [A] can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Bid Security

- 5.1 While submitting commercial bid, the [A] shall deposit an amount __ (to be specified in RFP) as Bid Security, with the CLIENT through any of the following instruments:-
- i. Bank draft or a pay order in favour of _____.
 - ii. A confirmed guarantee by an Indian nationalized bank, promising payment of the guaranteed sum to the CLIENT on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the CLIENT shall be treated as conclusive proof of payment.
 - iii. Any other mode or through any other instrument (to be specified in the RFP).
- 5.2 The Bid Security shall be valid up to a period of five years or the contractual obligations to the complete satisfaction of both the BIDDER and the CLIENT, including warranty period, whichever is later.
- 5.3 In case of the successful [A] a clause would also be incorporated in the article pertaining to performance Guarantee in the [B] that the provisions of sanctions

for violation shall be applicable for forfeiture of performance bond in case of a decision by client to forfeit the same without assigning any reason for imposing sanction for violation of this pact.

- 5.4 No interest shall be payable by CLIENT to the [A] on Bid Security for the period of its currency.
6. Sanctions for Violations
- 6.1 Any breach of the aforesaid provisions by the [A] or any one employed by it or acting on its behalf (whether with or without the knowledge of the [A]) shall entitle the CLIENT to take all or any one of the following actions, wherever required :-
- (i) To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the [A]. However, the proceedings with the other BIDDER(s) would continue.
 - (ii) The Bid Security (in pre-contract stage) and/or performance Bond (after the [B] is signed) shall stand forfeited fully and the CLIENT shall not be required to assign any reason therefore.
 - (iii) To immediately cancel the [B], if already signed, without giving any compensation to the [A].
 - (iv) To recover all sums already paid by the CLIENT, and in case of an Indian [A] with interest thereon at 2% higher than the prevailing prime lending rate of state bank of India, while in case of a [A] from the country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to [A] from the CLIENT in connection with any other [B], such outstanding payment could also be utilized to recover the aforesaid sum and interest.
 - (v) To encash the advance bank guarantee and performance bond, if furnished by the [A], in order to recover the payments, already made by CLIENT, along with interest.
 - (vi) To cancel all or any other contracts with the [A]. The [A] shall be liable to pay compensation for any loss or damage to the Client resulting from such cancellation/rescission and the client shall be entitled to deduct the amount so payable from the money(s) due to the [A].
 - (vii) To debar the [A] from participating in future bidding processes of the Government of India for a minimum period of five years, which may be further extended at the discretion of the CLIENT.
 - (viii) To recover all sums paid in violation of this pact by [A]) to any middleman or agent or broker with a view a view to securing [B] the contract.
 - (ix) In cases where irrevocable letters of credit have been received in respect of any [B] signed by the client with the [A], The shall not be opened.

- (x) Forfeiture of Performance Bond in case of a decision by the client to forfeit the same without assigning any reason for imposing sanction for violation of this pact.
- 6.2 The client will entitled to take all or any of the actions mentioned at para 6.1(i) to (x) of this pact also on the commission by the [A] or any one employed by it or acting on its behalf (whether with or without the knowledge of the [A], of an offence as defined in chapter IX of the Indian penal code, 1860 or prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 6.3 The decision of the CLIENT to the effect that a breach of the provisions of this pact has been committed by the [A] shall be final and conclusive on the [A]. However, the [A] can approach the Independent Monitor(s) appointed for the purposes of this Pact.
- 7. Fall Clause
 - 7.1 The [A] undertakes that it has not supplied/is not supplying similar product/systems or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/system or sub systems way supplied by [A] to any other Ministry/Department of the Government of India or a PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the [A] to the CLIENT, if the [B] has already been concluded.
- 8. Independent Monitors
 - 8.1 The CLIENT has appointed Independent Monitors (hereinafter referred to as Monitors) for this pact in consultant with the central vigilance commission (Names and addresses of the Monitors to be given)
 - 8.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this pact.
 - 8.3 The monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
 - 8.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
 - 8.5 As soon as the Monitor notices, or has reason to believe, a violation of this Pact, he will so inform the Authority designated by the CLIENT
 - 8.6 The BIDDER(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the CLIENT including that provided by the BIDOER. The [A] will also grant the Monitor, upon his request and demonstration of a valid Interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor

shall be under contractual obligation to treat the information and documents of the [A] with confidentiality.

- 8.7 The client will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the parties. The parties will offer to the Monitor the option to participate in such meetings.
- 8.8 The monitor will submit a written report to the MD/DFCCIL within 8 to 10 weeks from the date of reference or intimation to him by the CLIENT/BIDDER and, should the occasion arise, submit proposal for correcting problematic situations.

9. Facilitation of Investigation

In case of any allegation of violation of any provisions of this Pact or payment of commission, the CLIENT or its agencies shall be entitled to examine all the documents including the Books of Accounts of the [A] and the [A] shall provide necessary information and documents in English and shall extend all possible help for the purpose of such examination.

- 9.1 Law and Place of Jurisdiction: This pact is subject to Indian law. The place of performance and jurisdiction is the seat of the CLIENT.

10. Other Legal Actions

The actions stipulated in this integrity pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extant law in force relating to any civil or criminal proceedings.

11. The validity of this integrity pact shall be from date of its signing and extend up to 5 years or the complete execution of the [B] to the satisfaction of both the CLIENT and the [A] including warranty period, whichever is later. In case [A] is unsuccessful, this integrity pact shall expire after six months from the date of the signing of the [B].
12. Should one or several provisions of this pact turn out to be invalid; the remainder of this pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.
13. The parties hereby sign this integrity pact at On

CLIENT
Name of the Officer
Designation
Deptt./Ministry/PSU

BIDDER
CHIEF EXECUTIVE OFFICER

Witness

1. _____
2. _____

Witness

1. _____
2. _____

Note:

[A] - To be replaced by BIDDER/Seller/Consultant/Consultancy firm/Service provider as the case was may be.

[B] - To be replaced by Contract/Supply Contract/Consultancy Contract/Works Contract as the case was may be.

ANTI-PROFITEERING DECLARATION**TO WHOMSOEVER IT MAY CONCERN**

I, age, years, Son/Daughter of, resident of..... Do solemnly affirm and state as under:

- 1) That I am the _____ <Designation of the authorized signatory> of
And I am duly authorized to furnish this undertaking/declaration on behalf of (Name of the company).
- 2) That (Name of the company) has been awarded the work (Name of Work) vide Letter of Award number Dated by M/s Dedicated Freight Corridor Corporation of India Limited.
- 3) That the Company is fully aware of the anti-profiteering provision under the Goods & Services Tax ("GST") Law(s),
- 4) That the Company Has passed the benefit of input tax credit available on the (good/services) having HSN supplied to M/s Dedicated Freight Corridor Corporation of India Limited which it is getting on account of reduced tax liability and input tax credit because of enactment of GST Laws after introduction of Goods and Service Tax w.e.f. 1st July, 2017. The details and amounts being passed on to DFCCIL are provided in Annexure Of this document and are as per applicable GST Laws. These are true and correct to the best of my knowledge, information and belief.
- 5) Further, it is to confirm also that in case..... (name of the organization) will receive any further benefit in future after 1st July, 2017 by way of ailment of input tax credits which were not allowed to be availed before 1st July, 2017 or reduction in tax rates or in any other manner which results in reduction of cost of the goods/services supplied to M/s Dedicated Freight Corridor Corporation of India Limited, then Company will pass that benefit to M/s Dedicated Freight Corridor Corporation of India Limited also.
- 6) That I declare that the foregoing is true and correct and the same is a legal obligation and failure to fulfil it could result in penalties under the law.

Signature of tenderer (s)
With seal

- 7) I confirm that I am aware of the implication of the above undertaking and our liability on account of incorrect/misleading declaration under the GST Laws.

Signature of the Authorized signatory/ person

Name and Designation of the Auth. Sign/person of the person

Name of the Organization and Seal

Executed on a non-judicial stamp paper of Rs.100/- duly notarized by notary public

**FORMAT FOR CERTIFICATE TO BE SUBMITTED / UPLOADED BY TENDERER
ALONGWITH THE TENDER DOCUMENTS**

I (Name and designation)** appointed as the attorney/authorized signatory of the tenderer (including its constituents), M/s.....(hereinafter called the tenderer) for the purpose of the Tender documents for the work of..... as per the

tender No..... of..... (DFCCIL)**, do hereby solemnly affirm and state on behalf of the tenderer including its constituents as under:

1. I/we the tenderer (s) am/are signing this document after carefully reading the contents.
2. I/We the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.
3. I/we hereby declare that I/we have downloaded the tender documents from Indian Railway website www.ireps.gov.in. I/we have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenders, execution of work or final payment of the contract, the master copy available with the DFCCIL Administration shall be final and binding upon me/us.
4. I/we declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.
5. I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted along with the offer and same shall be binding upon me/us.
6. I/We declare that the information and documents submitted along with the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents, submitted by us.
7. I/we certify that I/we the tenderer(s) is/are not blacklisted or debarred by Railways or any other Ministry / Department of Govt. of India from participation in tender on the date of submission of bids, either in individual capacity or as a HUF/ member of the partnership firm/LLP/JV/Society/Trust.
8. I/we understand that if the contents of the certificate submitted by us are found to be forged/false or incorrect at any time during the process for evaluation of tenders, it shall lead to forfeiture of the Bid Security and may also lead to any other action provided in the contract including banning of business for a period of upto two years. Further, I/we (*insert name of the tenderer*) ** _____ and all my/our constituents understand that my/our offer shall be summarily rejected.
9. I/we also understand that if the contents of the certificate submitted by us are found to be false/forged or incorrect at any time after the award of the contract, it will lead to termination of the contract, along with forfeiture of Bid Security and Performance guarantee besides any other action provided in the contract including banning of business for a period of upto two year.
10. I/We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India and certify that I am/We are not from such a country or,

Signature of tenderer (s)
With seal

if from such a country, have been registered with the competent Authority. I/We hereby certify that I/we fulfil all the requirements in this regard and am/are eligible to be considered (evidence of valid registration by the competent authority is enclosed)

Place:

SEAL AND SIGNATURE
OF THE TENDERER

Date:

**** The contents in Italics are only for guidance purpose. Details as appropriate are to be filled in suitably by tenderer.**

No. P-45021/2/2017-PP (BE-II)
Government of India
Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
(Public Procurement Section)

Udyog Bhawan, New Delhi
Dated: 16th September, 2020

To

All Central Ministries/Departments/CPSUs/All concerned

ORDER

Subject: Public Procurement (Preference to Make in India), Order 2017– Revision; regarding.

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019 and Order No.P-45021/2/2017-B.E.-II dated 04.06.2020, hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017' dated 16.09.2020 effective with immediate effect.

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued:

1. This Order is issued pursuant to Rule 153 (ii) of the General Financial Rules 2017.
2. **Definitions:** For the purposes of this Order:

'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

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'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a 'Class-I local supplier' may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR- 2017, and will also include 'turnkey works'.

3. Eligibility of 'Class-I local supplier' / 'Class-II local supplier' / 'Non-local suppliers' for different types of procurement

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

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3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

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- (d) 'Class-II local supplier' will not get purchase preference in any procurement undertaken by procuring entities.

3B. Applicability in tenders where contract is to be awarded to multiple bidders - In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.
 - b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.
 - c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers' / 'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.
 - d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.
 - e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-para above.
4. **Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.
5. **Minimum local content:** The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

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percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier' / 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier' / 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
9. **Verification of local content:**
 - a. The 'Class-I local supplier' / 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier' / 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
 - b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier' / 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
 - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
 - d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
 - e. Nodal Ministries and procuring entities may prescribe fees for such complaints.
 - f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (ii) of the General Financial Rules along with such other actions as may be permissible under law.

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- g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.
- h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
- The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
 - on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
 - in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. Specifications in Tenders and other procurement solicitations:

- Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier' / 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.
- Reciprocity Clause**
 - When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

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- ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
 - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
 - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
 - v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.
- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

10A. Action for non-compliance of the Provisions of the Order: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11. Assessment of supply base by Nodal Ministries: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. Increase in minimum local content: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

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13. Manufacture under license/ technology collaboration agreements with phased indigenization: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. Powers to grant exemption and to reduce minimum local content: The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. Directions to Government companies: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

16. Standing Committee: A standing committee is hereby constituted with the following membership:

Secretary, Department for Promotion of Industry and Internal Trade—Chairman
Secretary, Commerce—Member
Secretary, Ministry of Electronics and Information Technology—Member
Joint Secretary (Public Procurement), Department of Expenditure—Member
Joint Secretary (DPIIT)—Member-Convenor

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The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.

17. **Functions of the Standing Committee:** The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee

- a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
- b. shall annually assess and periodically monitor compliance with this Order
- c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
- d. may require furnishing of details or returns regarding compliance with this Order and related matters
- e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
- f. may examine cases covered by paragraph 13 above relating to manufacture under licensee/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization
- g. may consider any other issue relating to this Order which may arise.

18. **Removal of difficulties:** Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.

19. **Ministries having existing policies:** Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order

20. **Transitional provision:** This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.



(Rajesh Gupta)
Director
Tel. 23083211
rajesh.gupta66@gov.in

Check List of Documents to Be Uploaded by the Bidder for Responsiveness of Bid

(refer clause No. 1.3.24 (d) vi of ITT)

Self-Declaration by the bidder

I/We fulfill the laid down Qualifying requirements as per this RFP. And I/We hereby submit the following check list and documents in support of our bid responsiveness:

SN	Item	Remarks
1	Have you submitted Covering Letter for offer as per Form-1	Yes/No
2	Have you furnished Details asked in Form 2 including Form 2A, 2B and 2C	Yes/No
3	Have you quoted Bid price online in the prescribed proforma Form -4)	Yes/No
4	Have you uploaded the Details asked in Form – 3A and also uploaded on IREPS?	Yes/No
5	Have you submitted a Bid Security? (Form- 5/ Form- 6)	Yes/No
6	Have you kept your offer valid for 90 days?	Yes/No
7	Have you kept Bid Security valid for 150 days?	Yes/No
8	Have you Submitted Form 8	Yes/No
9	Have you submitted Power of Attorney Format for Authorized Signatory as per Form- 9 or Form-13	Yes/No
10	Have you submitted Draft MOU For JV Between Parties as per Form- 10	Yes/No
11	Have you submitted Letter of participation from each partner of JV as per Form-12	Yes/No
12	Have you submitted the Integrity Pact Agreement as per Form-15(IP)	Yes/No
13	Have you submitted Anti Profiting Declaration in Form 16	Yes/No
14	Have you submitted Affidavit on Rs 100 Stamp paper as per Form 17	Yes/No
15	Have you submitted/ uploaded Certificate of local content as per MII policy enclosed as Form 18 (MII)	Yes/No
16	Have you submitted Affidavit on Rs 100 Stamp paper as per Annexure-T6	Yes/ No
17	Have you submitted self-declaration for compliance of clause 1.3.30 of ITT on	Yes/No
18	Have you submitted various Documents as per Clause 1.3.6 of ITT.	Yes/No
19	Have you submitted Firms PAN card & GST Registration certificate	Yes/No
20	MSME Certificate	Yes/No

Signature & Seal of the Bidder.

**SAMPLE
CONTRACT AGREEMENT**

THIS AGREEMENT ("Agreement") is made at **Ambala** on the ____ day of _____ BETWEEN

- (1) Dedicated Freight Corridor Corporation of India Limited, incorporated under the laws of India and having its principal place of business at, Office of Chief General Manager, **DFCCIL, 2nd Floor, OCC Building, Subedarganj, Prayagraj, U.P., India** (hereinafter called '**the Employer**'),
- And
- (2) _____, a company / corporation / JV incorporated under the laws of _____ having its principal place of business at _____

(hereinafter called '**the Contractor**').

WHEREAS in reference to a call for Tender for [**Name of Work**] as per Tender paper [**Tender Notice No.**] at Annexure "A" here to, the Contractor has submitted a Tender hereto and whereas the said Tender of the contractor has been accepted for [**Name of Work**]

As per copy of the Letter of Acceptance of Tender No----- dated ---- complete with enclosure at the accepted rates and at an estimated contract value of Rs. _____ (Rupees only). Now the agreement with witness to that in consideration of the premises and the payment to be made by the Employer to the Contractor provided for herein below the Contractor shall supply all equipment's and materials and execute and perform all works for which the said Tender of the Contractor has been accepted, strictly according to the various provisions in Annexure 'A' and 'B' hereto and upon such supply, execution and performance to the satisfaction of the Purchaser, the Purchaser shall pay to the contractor at the several rates accepted as per the said Annexure 'B' and in terms of the provisions therein.

IN WITNESS WHEREOF the parties here to have caused their respective Common Seals to be hereunto affixed/ (or have hereunto set their respective hands and seals) the day and year first above written.

For and on behalf of the Contractor

For and on behalf of the Employer

Signature of the authorized official
official Name of the official

Signature of the authorized
Name of the official

Stamp/seal of the Contractor

Stamp/Seal of the Employer

SIGNED, SEALED AND DELIVERED

By the said _____ Name

by the said _____ Name

On behalf of the Contractor in the _____
of:

on behalf of the Employer in the presence
presence of:

Witness _____

Witness _____

Name _____
Address _____

Name _____
Address _____

Enclosures:-

1. Annexure 'A' - Tender Papers No.
2. Annexure 'B' - Letter of Acceptance of Tender No. _____ Dated _____
3. Along with Summary of Prices

FORM No. 21

Signature of tenderer (s)
With seal

PROFORMA FOR TIME EXTENSION

No. _____

Dated: _____

Sub: (i) _____ (name of work).
(ii) Acceptance letter no. _____
(iii) Understanding/Agreement no. _____

Ref: _____ (Quote specific application of Contractor
for extension to the date received) _____

Dear Sir,

1. The stipulated date for completion of the work mentioned above is .From the progress made so far and the present rate of progress, it is unlikely that the work will be completed by the above date (or 'However, the work was not completed on this date').
2. Expecting that you may be able to complete the work, if some more time is given, the competent authority, although not bound to do so, hereby extends the time for completion from _____ to _____.
3. Please note that an amount equal to the liquidated damages for delay in the completion of the work after the expiry of _____ (give here the stipulated date for completion with/without any penalty fixed earlier) will be recovered from you as mentioned in Clause, 17-B of the Standard General Conditions of Contract for the extended period, notwithstanding the grant of this extension. You may proceed with the work accordingly.
4. The above extension of the completion date will also be subject to the further condition that no increase in rates on any account will be payable to you.
5. Please intimate within a week of the receipt of this letter your acceptance of the extension of the conditions stated above.
6. Please note that in the event of your declining to accept the extension on the above said conditions or in the event of your failure after accepting or acting up to this extension to complete the work by _____ (here mention the extended date), further action will be taken in terms of Clause 62 of the Standard General Conditions of Contract.

Yours faithfully

For and on behalf of the Employer

Name of the Official:-
Stamp/Seal of the Employer

CERTIFICATE OF FITNESS

1. (a) Serial Number _____
(b) Date _____
 2. Name of person examined _____
I certify that I have personally examined (*name*) _____
 3. Father's Name: son/daughter of _____,
residing at _____
 4. Sex _____
 5. Residence: _____
 6. Date of birth, if available, and/or certified age _____
 7. Physical fitness _____
 8. Identification marks _____
 9. Reasons for:

Who is desirous of being employed in a factory or on a work requiring manual labour and that his / her age as nearly as can be ascertained from my examination, is _____ years and that he/she is fit for employment in a factory or on a work requiring manual labour as an adult/child.
- (a) refusal to grant certificate, or _____

(b) Revoking the Certificate _____

Signature or Left Hand
Thumb Impression of the
Person Examined

Signature of Certifying Surgeon

Note: In case of physical disability, the exact details of the cause of the physical disability should be clearly stated

PROFORMA OF 7 DAYS NOTICE
(Without Prejudice)

To
M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

1. In spite of repeated instructions to you by the subordinate offices as well as by this office in various letters of even no. _____, dated _____; you have failed to start work/show adequate progress and/or submit detailed program me for completing the work.
2. Your attention is invited to this office/Chief Engineer's office letter no. _____, dated _____ in reference to your representation, dated _____.
3. As you have failed to abide by the instructions issued to commence the work/to show adequate progress of work you are hereby given 7 days' notice in accordance with Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress, failing which further action as provided in Clause 62 of the Standard General Conditions of Contract viz. to terminate your Contract and complete the balance work without your participation will be taken.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the
Employer Name of the
Official:- Stamp/Seal of the
Employer

PROFORMA OF 48 HRS. NOTICE
(Without Prejudice)

To

M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

1. Seven days' notice under Clause 62 of Standard General Conditions of Contract was given to you under this office letter of even no, dated _____; but you have taken no action to commence the work/show adequate progress of the work.
2. You are hereby given 48 hours' notice in terms of Clause 62 of Standard General Conditions of Contract to commence works / to make good the progress of works, failing which and on expiry of this period your above contract will stand rescinded and the work under this contract will be carried out independently without your participation and your Performance Guarantee shall also be encased and consequences which may please be noted.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the Employer
Name of the Official:-
Stamp/Seal of the Employer

Signature of tenderer (s)
With seal

PROFORMA OF TERMINATION NOTICE
(Without Prejudice)

No. _____ Dated _____

To
M/s _____

Dear Sir,

Contract Agreement No. _____
In connection with _____

Forty eight hours (48 hrs.) notice was given to you under this office letter of even no. Dated _____ but you have taken no action to commence the work /show adequate progress of the work.

Since the period of 48 hours' notice has already expired, the above contract stands rescinded in terms of Clause 62 of Standard General Conditions of Contract and the balance work under this contract will be carried out independently without your participation. Your participation as well as participation of every member/partner in any manner as an individual or a partnership firm/JV is hereby debarred from participation in the tender for executing the balance work and your Performance Guarantee shall also be encased.

Kindly acknowledge receipt.

Yours faithfully

For and on behalf of the Employer
Name of the Official:-
Stamp/Seal of the Employer

Signature of tenderer (s)
With seal

FINAL SUPPLEMENTARY AGREEMENT

1. Articles of agreement made this day _ in the year between the President of India, acting through the Railway Administration having his office at _ here in after called the Railway of the one part and of the second part.
2. Whereas the party hereto of the second part executed an agreement with the party hereto of the first part being agreement Number _____ dated for the performance _____ herein after called the 'Principal Agreement'.
3. And whereas it was agreed by and between the parties hereto that the works would be completed by the party here to of the second part on_date last extended and whereas the party hereto of the second part has executed the work to the entire satisfaction of the party hereto of the first part.
4. And whereas the party hereto of the first part already made payment to the party hereto of the second part diverse sums from time to time aggregating to Rs____including the Final Bill bearing voucher No._____ dated_____ of value_____duly

adjusted as per price variation clause, if applicable (the receipt of which is hereby acknowledged by the party hereto of the second part in full and final settlement of all his /its claims under the principal agreement.

And whereas the party hereto of the second part have received sum of Rs. _____ through the Final Bill bearing voucher No. _____ dated _____ duly adjusted as per price variation clause (PVC), if applicable (the receipt of which is hereby acknowledged by the party thereto of the second part) from the party hereto of the first part in full and final settlement of all his/its disputed claims under principal agreement.

Now, it is hereby agreed by and between the parties in the consideration of sums already paid by the party hereto of the first part to the party hereto of the second part against all outstanding dues and claims for all works done under the aforesaid principal agreement, the party hereto of the second part have no further dues of claims against the party hereto of the first part under the said Principal Agreement. It is further agreed by and between the parties that the party hereto of the second part has accepted the said sums mentioned above in full and final satisfaction of all its dues and claims under the said Principal Agreement.

(Applicable in case Final Supplementary Agreement is signed after release of Final Payment)

STANDING INDEMNITY BOND FOR "ON ACCOUNT" PAYMENTS**(On paper of requisite stamp value)**

We, M/s _____ hereby undertake that we hold at our stores Depot/s at _____ for and on behalf of the Managing Director/ DFCCIL acting in the premises through the Chief General Manager/ DFCCIL/PRYJ-W or his successor (hereinafter referred to as "The Employer") all materials for which "On Account" payments have been made to us against the Contract for (_____) on the section _____

_____ DFCCIL also referred to as Group/s _____ vide letter of Acceptance of Tender dated _____ and material handed over to us by the employer for the purpose of execution of the said contract, until such time the materials are duly erected or otherwise handed over to him.

We shall be entirely responsible for the safe custody and protection of the said materials against all risk till they are duly delivered as erected equipment to the employer or as he may direct otherwise and shall indemnify the employer against any loss /damage or deterioration whatsoever in respect of the said material while in our possession and against disposal of surplus materials. The said materials shall at all times be open to inspection by any officer authorized by the Chief General Manager/DFCCIL/PRYJ-W in charge of Dedicated Freight Corridor Corporation of India Limited (Whose address will be intimated in due course).

Should any loss, damage or deterioration of materials occur or surplus material disposed off and refund becomes due, the Employer shall be entitled to recover from us the 85% of supply portion of Part IV, Chapter – II (Form - 4) to the Contract (as applicable) and also compensation for such loss or damage if any long with the amount to be refunded without prejudice to any other remedies available to him by deduction from any sum due or any sum which at any time hereafter becomes due to us under the said or any other Contract.

Dated this dayday of 200

For and on behalf of
M/s(Contractor)

Signature of witness
Name of witness in Block letter.

Address.

Signature of tenderer (s)
With seal

DETAILED SAFETY MEASURES

(A) MEASURES TO BE ENSURED PRIOR TO START OF WORK

- 1.1 The contractor shall not start any work without the presence of DFCCIL supervisors at site.
- 1.2 The methodology in detail for execution of the work at site shall be approved by engineering in charge of the organization executing the work and copies of the same shall be available with contractor's supervisor, DFCCIL supervisor of the section in whose jurisdiction the work falls.

(B) PROTECTION OF TRACK DURING EMERGENCY

1. Action to be taken when a contractor's supervisor or vehicle operator apprehends any unusual circumstances likely to infringe the track and endanger safe running of trains. At any time if a contractor's supervisor or vehicle operator observes any unusual circumstances likely to infringe the track and apprehend danger to safe running of track, he shall take immediate steps to advise a DFCCIL official of such danger and assist him in protection of track.
2. The track shall be protected as under. One person shall immediately plant a red flag (red lamp during night) at the spot and proceed with all haste in the direction of approaching train with a red flag in hand (red lamp during night) and plant a detonator on rail at a distance of 600m from the place of obstruction of BG track after which he shall further proceed for not less than 1200m from the place of obstruction from BG track and plant three detonators at 10 m apart on rails. After this he shall display the red flag (red lamp during night) at a distance of 45 m from the detonators. Attempts shall also be made to send an advice to nearest DFCCIL/Railway station about the incident immediately.
3. Action to be taken if train is seen approaching to site of danger and there is no time to protect the track as per guidelines mentioned above. In such a case the detonators shall be planted on rails immediately at distance away from place of danger as far as possible and attention of driver of approaching train shall be invited by whistling, waving the red flag vigorously, gesticulating and shouting.
4. Action to be taken if more than one track is obstructed.
 - i. In case of single line protection as above shall be done in both the directions from place of danger.
 - ii. In case of double line or multiple lines, if other tracks are also obstructed, the protection as above shall be done for other track also.
 - iii. The protection shall be done in that direction and on that track first on which train is likely to arrive first.
 - iv. The Contractor's Supervisors, Operators and lookout men shall be properly explained about the direction of trains on running tracks.
5. Equipment required for protection of track: Minimum compliment of protection equipment i.e. 10 detonators, 4 red hand flags, 4 red hand lamps, 4 banner flags and whistles etc. shall always be kept ready at worksites for use in case of emergency. DFCCIL will arrange to provide detonators, whereas Contractor shall arrange other equipment at his own cost
6. Arrangement of lookout men and competency required for lookout man to warn labour about approaching train.
 - a. DFCCIL will provide lookout men.
 - b. The lookout men shall be properly trained in warning to staff at worksite about approaching

Signature of tenderer (s)

With seal

train.

- c. Only those lookout men shall be provided at site who have been issued with a competency certificate by the DFCCIL Supervisor.

(C) SAFETY ASPECTS TO BE OBSERVED WHILE WORKING IN OHE AREA

1. No electrical work close to running track shall be carried out without permission of DFCCIL representative.
2. A minimum distance of 2 m has to be maintained between live OHE wire and body part of worker or tools or metallic supports etc
3. No electric connection etc. can be tapped from OHE.
4. Authorized OHE staff should invariably be present when the relaying work or any major work is carried out.
5. Power block is correctly taken and 'permit to work' is issued.
6. The structure bonds, track bonds, cross bonds, longitudinal rail bonds are not disturbed and If disconnected for the work, they are reconnected properly when the work is completed.
7. The track level is not raised beyond the permissible limit during the work.

(D) Dos and DONT'S FOR WORKING IN A.C. TRACTION AREA

DO(s)

1. In case of fire on electric traction equipment or wires:
 - a. Inform Traction Power Controller (TPC).
 - b. Extinguish fire by special extinguishers (Carbon tetrachloride or carbon dioxide type), if available.
 - c. Ensure no water jet directed at the fire is used under any circumstances.
2. Anything unusual on traction wires or eclectic rolling stock, inform Traction Power Controller or nearest Station Master.
3. In any emergency speak to Traction Power controller through the nearest means of communication.
 - a) Large metallic structures such as fencing, structural steel work of platform running parallel to the track should be earthed suitably.
 - b) Any tree or branches likely to fall on live conductor or nearer than 4m from the nearest live conductor shall be cut or trimmed by concerned staff in the presence of authorized staff of OHE.
 - c) Before taking up the work on a line running parallel to 2*25KV/25kV AC lines, the line shall be earthed on both the sides of the working party.
 - d) Ensure that distance between the two earths used for protection of working party does not exceed 1 km.
 - e) Keep clear of the track and avoid contact with the rails when electric train within 250m.
 - f) Special care should be taken to carry long pipes, poles or ladders so that it should not come in contact with or within 2m of live OHE.

Signature of tenderer (s)
With seal

DON'T(s)

- a)** DO NOT approach within 2 meters (approximately 7 feet) of any traction wires or live equipment.
- b)** DO NOT work on or near traction wires or any live equipment unless they are made dead, earthed, and shut down notices/permit to work obtained.
- c)** DO NOT enter any switching station or remote-control center unless specially permitted.
- d)** DO NOT permit unauthorized persons to operate any equipment even if it be for making it dead.
- e)** DO NOT disturb any earthing or bonding or traction wires or connections to BEC (buried earth cable) or OPC (overhead protection cable).
- f)** DO NOT touch a person in contact with live traction wires. Remove body only after power supply is switched off & earthed.
- g)** DO NOT forget to give artificial respiration to the victim as per the prescribed procedure laid down at shock treatment charts.
- h)** DO NOT touch any traction wire hanging from the mast or fallen on the ground and do not allow anyone else to touch it.

ANNEXURE -II

Quarterly AVAILABILITY CERTIFICATE FORMAT

The operation and maintenance of machines has satisfactorily performed for_____days during the 3 consecutive months from_____to_____for which payment instalment is claimed. The details of Machines' availability days for quarter is furnished below.

Quarter Period	Month	M/C Availability Days	M/C Non-Availability Days
Total days			

Average no of days available/month = Days

Dy CPM/Civil/DFCCIL

Signature of tenderer (s)
With seal

Format for Competency Certificate

Certified that Shri _____ Supervisor/Operator of M/s. _____ has been trained and examined in safety measures to be followed while working in the vicinity of running DFCCIL track for the work. His knowledge has been found satisfactory and he is capable of supervising the work safely.

This certificate is valid only for the work mentioned in this certificate only.

Signature and designation of the officer

-X-

END OF DOCUMENT



PHOOLTAS TRANSRAIL LIMITED

RAIL BOUND MOBILE VEHICLE (8 -WHEELER)

MODEL : RBMV.02.B

G A U G E : 1676 mm



MAINTENANCE MANUAL

REFERENCE NO. MM/302B/3K23, REV.: -00

(All Right Reserved With Phooltas To Amend This Manual Any Time And To Issue It With Rev. No.)

 phooltas
 phooltas
 info@phooltas.org
 www.phooltas.org



B.O: Plot No.- 1A, Sector-7,IIE, SIDCUL, Haridwar, Uttarakhand-249403 (INDIA)
H.O.: Layak Enclave (East), Sahay Nagar, Phulwari Sharif, Patna Bihar-801506 (INDIA)

1. INTRODUCTION

PHOOLTAS make Rail Bound Mobile Vehicle with MMU equipment (Model-RBMV.02.B) is a 8 Wheeler, twin power pack, self-propelled car. RBMV is idle vehicle for rail track civil maintenance work to run on B.G schedule of DFCC network. RBMV has been provided with hydraulic knuckle boom crane (Total 2 Nos) i e, one no. each end on RBMV. RBMV and its mounted cranes are suitable to load – unload rail maintenance material at required site from loading platform and attached BFRS which are usually used for shipping at track site construction and maintenance work. RBMV is equipped with multiple maintenance units (MMU) and various other necessary tools & spares which are used in emergency and routine maintenance-inspection of track. Therefore proper maintenance of RBMV is necessary to ensure the reliability and availability in emergency and for regular maintenance work of track. This Operation and Maintenance manual of 8 Wheeler RBMV has been prepared with the objective of making operating personnel aware to correct operation and maintenance techniques adopted in field.

This vehicle has been provided with two knuckle boom crane with load lifting capacity (1 ton at 15M reach), suitable storage rack, cubical, cupboards, pigeon box for MMU tools and spares track maintenance work. Vehicle has been equipped with A.C cabins for Crew and drivers which is an ideal vehicle for RBMV work.

I.O.H & P.O.H schedules are not included in warranty/DPL. I.O.H defined as 42 months working. P.O.H defined as 72 months working.

2. INDEX

S.NO.	DESCRIPTION	PAGE NO.
1	INTRODUCTION	2
2	INDEX	3-5
3	MAINTENANCE SCHEDULE	6
3.1	DAILY CHECK	
3.2	DAILY FUNCTIONAL CHECK	
4	ENGINE MAINTANANCE SCHEDULE	7-8
4.1	DAILY CHECK	
4.2	EVERY 300 HOURS OF ENGINE RUNNING	
4.3	EVERY 1000 HOURS OF ENGINE RUNNING	
4.4	EVERY 4000 HOURS OF ENGINE RUNNING.	
4.5	EVERY 10000 HOURS OF ENGINE RUNNING.	
5	BRAKE AND PNEUMATIC LINE	9-10
5.1	DAILY CHECK	
5.2	WEEKLY CHECK	
5.3	MONTHLY CHECK	
5.4	SIX MONTH CHECK	
5.5	YEARLY CHECK	
5.6	3-1/2 I.O.H	
5.7	P.O.H	
6	HYDRAULIC POWER PACK	11
6.1	DAILY CHECK	
6.2	WEEKLY CHECK	
6.3	MONTHLY CHECK	
6.4	THREE MONTH CHECK	
6.5	SIX MONTH CHECK	
6.6	YEARLY CHECK	
6.7	THREE YEAR I.O.H. / CHECK	
6.8	P.O.H	
7	TRANSMISSION	12
7.1	DAILY CHECK	
7.2	WEEKLY CHECK	
7.3	MONTHLY CHECK	
7.4	THREE MONTH CHECK	
7.5	SIX MONTH CHECK	
7.6	YEARLY CHECK	
7.7	I.O.H	
7.8	P.O.H	
8	SUSPENSION / BOGIE	13-14
8.1	DAILY CHECK	
8.2	WEEKLY CHECK	

8.3	MONTHLY CHECK	13-14
8.4	SIX MONTH CHECK	
8.5	YEARLY CHECK	
8.6	I.O.H YEAR CHECK	
8.7	PACKING BELOW THE SPRING IN BOGIE ASSEMBLY AFTER RE-PROFILING THE WHEEL.	
8.8	P.O.H	
9	AXLE DRIVE GEAR BOX (ADGB) ASSEMBLY	15
9.1	DAILY CHECK	
9.2	WEEKLY CHECK	
9.3	MONTHLY CHECK	
9.4	THREE MONTH CHECK	
9.5	SIX MONTH CHECK	
9.6	YEARLY CHECK	
9.7	3-1/2 TO 4 YEAR I.O.H. OR 2,50,000 KM. RUN	
9.8	P.O.H 300000 KM RUN	
10	TORQUE ARM ASSEMBLY	16
10.1	DAILY CHECK	
10.2	WEEKLY CHECK	
10.3	SIX MONTH CHECK	
10.4	YEARLY CHECK	
10.5	I.O.H	
10.6	P.O.H	
11	POWER LINE DRIVE SHAFT CARDAN SHAFT	17
11.1	DAILY CHECK	
11.2	MONTHLY CHECK	
11.3	I.O.H	
11.4	P.O.H	
12	AXLE BOX ASSEMBLY	17
12.1	DAILY CHECK	
12.2	MONTHLY CHECK	
12.3	SIX MONTHLY CHECK	
12.4	YEARLY CHECK	
12.5	I.O.H	
12.6	P.O.H	
13	WHEEL ASSEMBLY	18
13.1	WEEKLY CHECK	
13.2	I.O.H	
13.3	P.O.H	
13.4	WHEEL PROFILE MAINTENANCE	
14	AXLE	18
14.1	YEARLY CHECK	
14.2	P.O.H	
15	ELECTRICAL CHECK AND MAINTENANCE	18-19
15.1	DAILY CHECK	

15.2	WEEKLY CHECK	18-19
15.3	MONTHLY CHECK	
15.4	YEARLY CHECK	
15.5	I.O.H	
15.6	P.O.H	
16	RECOMMENDED OIL AND LUBRICANTS	19
17	MAINTENANCE OF BATTERY	20
17.1	MAINTENANCE OF BATTERY CAN BE DIVIDED INTO TWO SCHEDULES	
17.2	HYDROMETER READING AND BATTERY CONDITION	
18	MAINTENANCE OF BRAKE VALVES	21-23
18.1	A-9 AUTOMATIC BRAKE VALVE	
18.2	SA-9 INDEPENDENT BRAKE VALVE	
18.3	C3W DISTRIBUTOR VALVE	
18.4	D-1 AUTO DRAIN VALVE	
18.5	J-1 SAFETY VALVE	
18.6	N-1 REDUCING VALVE	
18.7	DOUBLE CHECK VALVE	
19	TROUBLE SHOOTING	24-30
19.1	TROUBLE SHOOTING OF ENGINE	
19.2	TROUBLE SHOOTING OF TRANSMISSION	
19.3	TROUBLE SHOOTING OF THE ELECTRICAL SYSTEMS	

3. MAINTENANCE SCHEDULE

Objective: To keep up of 8 wheelers all time availability in working conditions.

Back Ground: Rail Bound Maintenance Vehicle 8 Wheeler (RBMV.02.B) is twin power pack, self-propelled 4 axle vehicle to run on B.G schedule of DFCC network. RBMV has been provided with hydraulic knuckle boom crane (22tm) at either end of RBMV which is idle for handling rail construction material for attached BFR and RBMV itself which are used for regular loading – unloading of track construction and maintenance material to carry at maintenance site. This special maintenance instruction has been prepared to maintenance 8-wheelers so that its availability can be ensured all the time.

Following maintenance instructions to be followed for various components: -

3.1 DAILY CHECK – (by operator before work site proceeding)

S.No.	Visual check
1.	Check all safety locks are O.K
2.	Check shut off cock and drain cock of pneumatic line are in normal position.
3.	Check shut off cock of hydraulic reservoir are in open position for working.
4.	Check there is no leakage of fuel, hydraulics, transmission oil, ADGB oil and coolant.
5.	Availability of tools, manuals and emergency spares.
6.	Sufficient availability of fuels, hydraulic oil, transmission oil and ADGB gear oil.
7.	Availability of fire extinguisher.
8.	Availability of first aid box.
9.	Visual inspection of under frame e. g. wheels, springs, transmission, cardan shaft, axle drive gear box and nut-bolts etc.
10.	Visual inspection of on Floor & under floor mounted components i.e. Hyd. power pack, crane, elevating platform and control valve, drum stand, cradle unit auger aux. alternator 110 V battery.

3.2 DAILY FUNCTIONAL CHECK

S.No.	Functional check
1.	Proper condition of engine and battery, and switch box.
2.	Smooth starting of engine.
3.	Normal working sound and smoke of engine.
4.	Proper working of brakes (service SA-9, A-9, emergency, parking and V.C.D. applied.)
5.	Proper working of head light.
6.	Proper working of tail light.
7.	Proper working of flasher light.
8.	Proper working of horn.
9.	Proper working of wiper.
10.	Operation from both cabins and controls provided for other equipment.
11.	Proper function of safety switches and inter locks of operating equipment.

4. ENGINE MAINTANANCE SCHEDULE:

4.1 Daily check

A-Check

S.No	Maintenance steps
1.	Check previous day's engine log book, correct as required.
2.	Drain Water and sedimentation from fuel filter through drain cock. Before starting the engine.
3.	Check engine oil and top up if necessary
4.	Check fuel level in fuel tank top up if low level.
5.	Coolant level in radiator, fill radiator / makeup tank with premix coolant as per Manufactures recommendation
6.	Check fuel line joints for any leakage
7.	Start the engine and note oil pressure at low and high idle.(ref. Manufactures Manual)
8.	Engine display, check and record display reading of hour meter, speedometer and battery charging for proper working.
9.	Check Poly groove 'V' belts and 'B' belt coolant pump, charging alternator and AC compressors for proper tension.
10.	Check coolant line and fuel line leakage, rectify if any.

4.2 EVERY 300 HOURS OF ENGINE RUNNING

B-Check

S.No	Maintenance steps
1.	Repeat all maintenance steps of 'A' daily check and do additional 'B' check schedule of engine
2.	Check leakage of Engine and radiator assembly i.e. lub. Oil , coolant ,turbo charger etc.
3.	Check other roof top components, pipe couplings are tighten properly.
4.	Vibration damper- check vibration damper attached drive shaft coupling bolts for Aux. alternator for proper fastener tighten if loose.
5.	Fuel filter, water separator filter, lub. oil and lub. oil filters- replace with new one.
6.	Coolant level check and top-up.

4.3 EVERY 1000 HOURS OF ENGINE RUNNING

C-Check

S.No	Maintenance steps
1.	Repeat all maintenance steps of Checks 'B' and do additional 'C' check schedule of engine
2.	Mounting bolts of engine, check and ensure all mounting bolts and connecting pipes of engine are properly tightened.
3.	Engine coolant pump, check for if any leakage.
4.	Tighten of flexible connection of after cooler and radiator are proper. Do not tighten when engine is hot condition.
5.	Change air filter elements.
6.	Engine breather, clean engine breather.
7.	Air compressor, clean and check for proper functioning
8.	Check vibration damper attached drive coupling for Aux. alternator for proper fastener tighten if loose.
9.	Fuel filter, water separator filter, coolant filter lub. oil and lub. oil filters- replace with new one.

4.4 EVERY 4000 HOURS OF ENGINE RUNNING.

D-Check

S.No.	Maintenance Steps
1.	Repeat all maintenance steps of A,B & C check
2.	Check exhaust and inlet manifold and nuts.
3.	Tighten all mounting bolts and nuts.
4.	Clean Turbocharger diffuser and impeller.
5.	Check turbocharger bearing sound and vibration for normal working.
6.	Check engine mounting pad for any crack or ageing, replace is required.
7.	Replace filter of lub. oil fuel oil and coolant.
8.	Replace engine lubrication oil, engine coolant.
9.	Drain the radiator coolant and fill-up with new coolant.
10.	Self-starter and alternator servicing

4.5 EVERY 10000 HOURS OF ENGINE RUNNING.

IOH check

S.No.	Maintenance Steps
1.	Repeat all maintenance steps of A,B,C & D check
2.	Fuel tank and suction strainer dismantle clean and re assembly
3.	Check engine blow by
4.	Check engine exhaust smoke (if any unburnt fuel, black/white smoke are rectify accordingly)
5.	Check engine temperature
6.	Self-starter and alternator servicing
7.	Check Turbocharger and rectify for any defect.

5. BRAKE AND PNEUMATIC LINE

5.1 Daily check

- Visually check for any damage of hose pipe, pneumatic pipe and components if any rectify them.
- Drain condensate water for CDC, and all air reservoir by manual cock provided at its bottom portion.
- Visually check of brake block, hanger, pin for any damage, if any rectify it.
- Check function of brake, horn and other pneumatic operated system for proper working.

5.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Check brake rigging arrangement for any defects / deficiencies and check brake cylinder mounting for proper condition.
- Examine brake beams / cross bar for any breakages / damages.
- Check and attend cross bar safety straps.
- Check and attend brake shoe head and key necessary.
- Check and adjust worn brake blocks clearance if required.
- Visually inspect brake hangers, brake lever, pins and cotters / split pins for proper condition.

5.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Externally clean the brake system, after cooler pneumatic pipes and check for leakages. If required tighten the end fittings.
- Check the mounting fasteners of air reservoir, control panel / distributor valve relay valve magnet valve and other brake system equipment.
- Check and attend brake block adjuster.
- Examine and attend brake levers.
- Examine and attend brake hanger lever brackets.
- Lubricate pin and pivot joints of hanger and lever.
- Check governor cut in and cut out pressure for proper setting.
- Check safety valve for proper function.

5.4) Six Month check (Include all Monthly check schedule along with Six month schedule)

- Check brake block thickness, replace and adjust brake clearance as required.
- Check pressure switch and all pneumatic safety switches for proper functioning adjust if required.
- Check gauges and indicator for proper functioning.

5.5) Yearly check (Include all Six month check schedule along with Yearly schedule)

- Check rubber packing any leakage on panel brake, replace packing if required.
- Check all components on brake panel for proper functioning and no leakages from them.
- Check any damages of flexible hose / pipe for any external crack or damages, replace them.

5.6) I.O.H (42 months working)

- Overhaul the safety switch.
- Clean the chokes, exhaust plugs, mesh filters in the distributor valves on panel brake control valve and check proper functioning of all sub-assemblies.
- Overhaul the drivers brake valve (SA9, A9). Replace all the rubber items and clean filters.
- Check for proper functioning of relay valves and replace the damaged / worn out components / valve assembly
- Replace rubber / sealing washer of air brake hose end (B.P line) coupling.
- Check all the hose assemblies of brake system for damage or over ageing, replace if required.
- Replace all the rubber items and choke in the brake system equipment's like safety valves, Auto Drain Valves Drivers Brake valve, Relay valve Tread brake Block units, Isolating cocks, Dust collectors, Angle cocks, filters etc.
- Check the Distributor Valve sub-assemblies and entire assembly for proper functioning, replace rubber items, chokes and springs only if required.

- Replace all hose assemblies if not done so far.

5.7) P.O.H (72 months working)

- Repair and maintenance of brake system including overhauling of all components.
- Change of distributor valve.
- Change of all service brake cylinders.
- Change of all parking brake cylinders.
- Change of all rubber house.
- Change of all gauges.
- Change of all A9, SA9 & Emergency valve
- Change of all N1, D1 and pressure switch.

6. HYDRAULIC POWER PACK_ (for radiator fan, crane and A.C drive)

6.1) Daily check

- Check shut off cock of reservoir are open position.
- Check oil level in hyd. reservoir, if required top up.
- Check any leakage of hyd. hose / joints, rectify.
- Check smooth operation and pressure of working equipment are in proper range.
- Check any abnormal sound of pump, motor and control section, record for any service or maintenance required, attend.

6.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Externally through clean of hydraulic components if any oil leakage check and tighten the joints.
- Check any damages hose, pipe and clamp, rectify it.
- Check function of smooth operation and movement of all hyd. operated unit.

6.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Check filter clogging / choking indicator are in normal working range.
- Check hydraulic pump, motor and control valve mounting face for any leakage rectify it.
- Check condition of pressure hose for any cut / damages, rectify or replace it.

6.4) Three Month check (Include all Monthly check schedule along with Six month schedule)

- Remove dust accumulation on hydraulic reservoir, valves unit, cylinder rod and hose joints.
- Check filter clogging indicator, replace filter element as required.
- Check any leakage from hydraulic power unit pipe joint, tighten them.
- Check mounting fasteners of hydraulic power pack, if any loose tighten them.

6.5) Six Month check (Include all Monthly check schedule along with Six month schedule)

- Remove drain plug and drain hydraulic reservoir.
- Remove suction strainer and clean before refitting in reservoir.
- Thorough clean of hydraulic bottom dirt of reservoir inside before putting new oil.
- Replace new filter elements for proper hydraulic equipment working.
- Check leakage from fitting and tighten, if still leakage observe then replace fitting.

6.6) Yearly check (Include all Six month check schedule along with Yearly schedule)

- Check pump and motor drive coupling for proper condition, replace if worn out or abnormal.
- Check and reset pressure for normal operating range as per manual.
- Check for damage hose pipes, joints leakage, replace as required.

6.7) I.O.H. / check (Include Yearly check schedule along with Three Year schedule)

- Externally clean all hydraulic components before removing from equipment.
- Check cylinder seal and cylinder condition, if required replace cylinder unit.
- Replace crack / damages and ageing pressure hoses if required.
- Replace suction strainer and filter element.
- Check electro hydraulic valve for any malfunctioning, replace them if earlier it has been not replace.
- Check pump and motors for proper working capacity pressure, shaft seal and drive shaft condition, if abnormal or wear out send them for reconditioning.
- Hyd. Tank cleaning & magnetic suction strainer cleaning
- New hyd. Oil change

6.8) P.O.H (72 months working)

- All hyd. Pump & motor. change or overhaul
- Change all hyd. House.
- Change all fillers & suction strainer

7. TRANSMISSION

7.1) Daily check

- Check oil level in oil sump, top up with proper grade (SAE 30, C4) if required.
- Check any leakage from transmission body joints, hose pipe and fittings rectify it.
- Check linkage / clevis of transmission shift control cylinder for loose, rectify it.
- 7.2) Weekly check (Include all daily check schedule along with weekly check schedule)
- Clean transmission externally by air.
- Clean air breather of transmission.
- Check transmission clutch/main pressure in pressure gauge for normal range (9.2 kg to 10 kg/cm²).
- Check transmission control linkage are properly adjusted and tighten.
- Check transmission mounting fastener if loose, retighten it.

7.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Check transmission main / clutch oil pressure for normal range.
- Check transmission oil temperature for normal working range 82°C to 93°C Maximum oil temperature should not exceed from 120°C .
- Check Electro pneumatic valve for transmission is working properly.
- Check clutch cut off cylinder is working properly.
- Check gears safety cylinder working properly.

7.4) Three Month check (Include all Monthly check schedule along with Three month schedule)

- Check breather and filter housing.
- Replace transmission filter element with proper seal ring after 500 hrs. working
- Sump oil-First replace after 500 working hrs. Thereafter replace the oil after every 1000 hrs. of working.
- Check and clean oil suction strainer.

7.5) Six Month check (Include all Three Monthly check schedule along with Six month schedule)

- Check main transmission oil pressure for proper range (140 PSR). (Ref. transmission manual)
- Check electro pneumatic valve and pneumatic air cylinder of transmission control for any leakage and proper functioning, rectify it.

7.6) Yearly check (Include all Six month check schedule along with Yearly schedule)

- Check house of gear shifting cylinder, replace if req.
- Check shifting cylinder, replace/rectify as req.
- Check all pneumatic valves, replace/rectify as req.

7.7) I.O.H

- Check transmission clutch pressure if low rectify clutch plates.

7.8) P.O.H

- Over hauling of transmission clutch plate, pressure plate and pump
- Change shifting cylinder
- Change pneumatic solenoid
- Change all hoses
- Change all safety switches

8. SUSPENSION /BOGIE

8.1) Daily check

- Visual check bogie frame and linkages for any damages.
- Visual check of helical coil spring, rubber packing for any damages.
- Visual check of linkages pin in and cotter pins are properly secured.

8.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Examine visually the condition of bogie side frame, transom, longitudinal, bolster etc. at all welded locations.
- Examine rubber stopper / stop of axle box crown for damage / missing / loose.
- Inspect axle box safety straps / loops for damage / breakage / missing.
- Inspect bolster safety straps / loops for damage / breakage / missing.
- Inspect brake hanger brackets for damages.
- Inspect safety brackets for brake hanger pins.
- Check visually hanger & brackets.
- Visually examine axle box springs for breakage/damage.
- Visually examine dashpot oil filling special screw for deficiency.
- Check oil leakages in dashpot through defective seals/vent screws.
- Visually examine axle box clearance.
- Visually examine bolster springs breakages / damages.
- Visually examine bolster lower spring beam.
- Visually examine BSS hangers, hanger blocks, and BSS pins.
- Visually examine equalizing stay rods and pins (small and big).
- Visually check rubbing plate.
- Visually examine equalizing stay brackets.
- Examine and attend safety loops of bolster.
- Check and attend safety loops of equalizing stay rod.
- Examine vertical shock absorbers for damages.
- Lubricate brake pivot and hanger pins weekly.
- Examine rubber stopper/stop screw of axle box crown for damage / missing / looseness.
- Inspect axle box safety straps/loops for damage/breakage/missing.

8.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Examine oil level in side bearer oil both and oil filling cap replace oil if needed.
- Add specified grade of oil in dashpot.
- Check center pivot clamp bolts for proper tightening.
- Check sock observer for any leakage.
- Lubricate side bearer ports and center pivot monthly.

8.4) Six Month check (Include all Monthly check schedule along with Six month schedule)

- Examine condition of side bearer wear piece and wear plate.
- Check and ensure proper axle guide assembly clearances with gauge.
- Clean through bogie frame and spring assembly
- Check bolster clearance for primary and secondary suspension for proper range.

8.5) Yearly check (Include all Six month check schedule along with Yearly schedule)

- Bogie frame should be checked thoroughly after cleaning for any possible cracks.
- Check for wheel flange gear in the rear cover box of roller bearing axle box.
- Check alignment of guide for proper range.

8.6) I.O.H (Include Yearly check schedule along with Three Year schedule)

- Clean thoroughly bogie and suspension assembly Remove bogie and it attached brake hose components for replacing worn out bushes, packing and damages components.
- Check and replace worn out bushes and pins of bogie hanger.
- Check and replace guide bushes and wear plates.
- Check spring free height and pairing for assembly If required replace spring in the suspension unit.
- Check and adjust bogie bolster clearances in primary and secondary stage by adding required packing of after wheel profiling.

8.7) Packing below the spring in Bogie assembly after re-profiling the wheel.

- After wheel wear (in diameter) a packing, has to be provided below the lower spring seat to raise the body. After providing packing stopper assembly and axle safety strap assembly is adjusted accordingly.
- Once the diameter of the wheel reduced as (fully worn), it is discarded and is replaced by new ones. Earlier added / packing below the spring sheet should be removed to maintain buffer height

8.8) P.O.H

- Replace the all primary and secondary spring
- Replace all rubber pads
- Replace all brake chamber
- Replace all pin & bushes

9. AXLE DRIVE GEAR BOX (ADGB) ASSEMBLY

9.1) Daily check

- Check oil level of ADGB by oil level gauge or by dip-stick top up if required.
- Check any leakage from external pipe connection hose and joints, re-tight and rectify.

9.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Clean ADGB surface ADGB / Aux. gear box surface.
- Check the oil level in sump weekly, top up if required.
- Check any leakage on ADGB surface and auxiliary lubrication gear box attached with ADGB, tight fastener to rectify it.

9.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Clean oil filler and breather assembly
- Check input drive shaft fastener for proper tightening.
- Check any leakage from input bearing carrier seal or output seal, rectify it.

9.4) Three Month check (Include all Monthly check schedule along with Three month schedule)

- Through clean surface of ADGB and Aux. gear box.
- Change the sump oil after first 500 working hr. thereafter replace the oil after every six Months of working whichever is earlier.
- Remove oil from ADGB, Clean bottom internal face by removing drain plug and suction strainer.
- Clean suction strainer and oil filler breather assembly
- If reuse the oil then it should be clean properly or replace with new gear oil of proper grade in ADGB
- Check for any leakages from packing or pipe line of ADGB.

9.5) Six Month check (Include all Three Monthly check schedule along with Six month schedule)

- Through clean surface of ADGB and Aux. gear box.
- Check for any leakages from oil seal, packing or pipe line of ADGB, rectify it.

9.6) Yearly check (Include all Six month check schedule along with Yearly schedule)

- Check and ensure drive flange and coupling fastener condition for proper functioning.
- Replace ADGB oil and suction strainer with new.

9.7) I.O.H. or 2, 50,000 km. run

- This work should be carried out at authorized by OEM only. Remove final drive from 8 wheeler car, clean thoroughly ADGB and Auxiliary gear box surface and dismantle the assembly and sub assembly, inspect gear and bearing condition. The defective component, oil seal and packing should be replaced. Sagest to recommendation of OBM only.

9.8) P.O.H 300000 km run

- Dismantle ADGB and sub assembly, change Gear and bearing, oil seal, shaft etc. subject to recommendation of OEM only.

10. TORQUE ARM ASSEMBLY

Note: During maintenance of ADGB, torque arm assembly must be thoroughly for any crack etc.

10.1) Daily check

- Check the tightness and locking of fasteners.

10.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Lubrication of spherical joint to be done as and when required.

10.3) Six Month check (Include all Three Monthly check schedule along with Six month schedule)

- Spring disk to be checked physically. If found damage replace it.
- Pre- compression of spring disk to be maintained for the specified value by tightening the castle nut at one end of torque arm.
- Spherical joints and bushes are checked for wear.
- Check for proper tighten of lock nut and split pin.

10.4) yearly check (Include Six month check schedule along with Yearly schedule)

- Check rubber disc pad for any crack or ageing replace with new.

10.5) I.O.H

- Change all rubber and plates' disc.

10.6) P.O.H

- Change all rubber & plates' disc.
- Change all nuts & bolts and dowel pin.

11.POWER LINE DRIVE SHAFT CARDAN SHAFT

11.1) Daily check

- Check all fastener of anti-vibration mounting pads of alternator, engine and transmission are properly secured.
- Check all fastener of drive shaft flange are properly tightens and secured.

11.2) Monthly check (Include all daily check schedule along with weekly check schedule)

- Lubricate the cardan shaft cross joint and slip joint with grease gum.
- Check and tighten the flange bolts of cardan shafts.

11.3) I.O.H:

- Virtual inspection of shaft if req. to replace (subject to recommendation of OEM)

11.4) P.O.H:

- Cardan shaft replace with new one including all fasteners.

12. AXLE BOX ASSEMBLY

12.1) Daily check

- Check fastener lock nut and split pin for proper securing.
- Check any hitting of axle box crown and damage of pad if any.

12.2) Monthly check

- Clean axle box external surface for removing dust and any grease spilled out.
- Check housing stopper rubber are proper in position.
- Ensure for proper tighten of end cover.

12.3) Six Monthly check

- Clean axle box external surface for removing dust and any grease spilled out.
- Check & top-up the grease in axle box AP-3 grease 1.5 kg. In each axle box.
- Ensure for proper tighten of end cover.
- Check axle housing temperature after long run for good bearing health.

12.4) yearly check (Include Three month check schedule along with Yearly schedule)

- Replace new 'O' ring / packing.

12.5) I.O.H

- Over hollowing of ABM replace bearing (subject to recommendation of OEM)

12.6) P.O.H

- Replace the bearing of all axle (subject to examination of OEM)

13. WHEEL ASSEMBLY

13.1) Weekly check

- Check for any abnormal wear or drag on wheel face, flange for normal running.

13.2) I.O.H

- Check comedown limit and wheel profile machining (subject to recommendation of OEM)

13.3) P.O.H

- Check comedown limit & wheel profile of wheel subject to recommendation of OEM

13.4) Wheel Profile Maintenance

- At every wheel profile maintenance wheel gauge should be within tolerance should be +1/-1 mm.
- Wheel diameter new 952 mm, condemning limit 877 mm, last work shop machining size will be 885mm.

14. AXLE

14.1) Yearly Check

- Visual inspection of axle any observation noise coming during running or etc.

14.2) P.O.H:

- Ultrasonic testing of axle shall be conducted out by authorized testing inspector by OEM only.

15. ELECTRICAL CHECK AND MAINTENANCE

15.1) Daily check

- Check operator panel switches and electrical gauges for proper functioning.
- Check light, fan and there switches for proper working.
- Check head light, tail light, marker light for proper working.
- Check remote control box and pendant for equipment and crane control are working properly.

15.2) Weekly check (Include all daily check schedule along with weekly check schedule)

- Check the battery terminal.
- Check and fill the electrotpe level in battery.
- Check all junction box electrical connection are properly tighten.
- Check M.C.B switches for proper working.
- Check relay and contractor for proper working.
- Check electro pneumatic solenoid and electro hyd. solenoid proper working.
- Check battery charging alternator of engine 24 V and Aux. (110 V) for proper charging.
- Check engine display unit, tachometer and VCD for proper working.
- Check electrical safety switches, electro pneumatic pressure switches and electro pneumatic valve for transmission shift control and parking brake application for proper working.
- Check air drier electrical valve function for purging.

15.3) Monthly check (Include all Weekly check schedule along with Monthly schedule)

- Check manually operate control panel lever and switches for smooth operation.
- Check interlocks and safety switches for proper working.
- Check high and low voltage circuit in cable for good working.
- Check and clean dirt/rush on battery terminal, tight, clean apply petroleum jelly
- Check specific gravity of electrolyte.
- Check aux. alternator drive belt / coupling for proper condition.
- Check cable connection joints points for any loose or insulation damage.

15.4) Yearly check (Include all six month check schedule along with Yearly schedule)

- Check engine safety switches for proper working, if malfunctioning replace them.
- Check control panel switches for proper working, if malfunctioning replace them.
- Check battery voltage for proper working, check specific gravity top up if required.
- Apply petroleum jelly on battery terminal connection.

15.5) I.O.H

- Examination of all relay, contactor, switches, elements, safety switches, horns if malfunctioning to replace (subject to recommendation of OEM)

15.6) P.O.H

- Replace of all relay, connector, switches, elements, safety, and hones ((subject to recommendation of OEM)

16. RECOMMENDED OIL AND LUBRICANTS:**ENGINE (A.L N6)**

Water coolant	-	240 Liters. (Twin radiator + coolant tank) EURO COOL LL MAX 50
Engine Lub. Oil Approx. quantity	-	30 liters. x 2 = 60 Liters
Oil Multi grade 20 W/40	-	Indian oil/Bharat Petroleum/Hindustan Petroleum / Equivalent.

TRANSMISSION (AVTEC)

Approx. quantity	-	80 liters. X 2 = 160 Liters.
Transmission oil	-	Type C4 - SAE 30

AXLE DRIVE GEAR BOX**Hydrodynamic drive**

Approx. quantity	-	2 x 35 liters / box = 70 liters
Gear oil	-	EP – 90

AXLE BOX

Grease	-	8 x 1.5 kg / Bearing (AP-3 Castrol)
Bogie dash port and side bearer housing	-	EP – 90 oil 0.5 x 8 = 4 Liters.

HYD. OIL

Hyd. Oil	-	SAE 68, Qty.- As per equipment capacity.
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17. MAINTENANCE OF BATTERY

17.1) Maintenance of battery can be divided into two schedules

- I. Weekly Schedule
- II. 6th months Schedule

I. Weekly Schedule

- Check the level of electrolyte in all the cells and top up distilled water if necessary.
- Check the specific gravity and voltage of 4-pilot cells.
- Check the inter cell connection for looseness and crack in container. Rectify if necessary.
- Check the tap of cells and arrange for cleaning of dust etc by wet cloth.
- In case of sulphation of terminals remove the connections, clean, put back and apply petroleum jelly.

II. 6th months Schedule

In addition to the weekly schedule following are also to be attended.

- Check specific gravity and voltage of all cells.
- Remove inter cell connections, take out the cells, clean thoroughly the cells, inter cell and end cell connections and fit back in the TW. Apply petroleum jelly.
- Check vent plugs. Provide ceramic vent plug if not provided. Tighten if necessary and replace if missing.
- Check the cells by cell tester. Replace defective cells.

17.2) Hydrometer Reading and Battery Condition

Hydrometer reading Correct at 27° C	Battery Condition
1.250 ± 0.005	Fully Charged
1.170 ± 0.005	75 % Charged
1.120 ± 0.005	50 % charged
1.100 or below	must be recharged

18. MAINTENANCE OF BRAKE VALVES

18.1) A-9 Automatic Brake Valve

The A-9 automatic brake valve is a compact self-lapping, pressure maintaining brake valve which is capable of graduating the application or release of OHE car air brakes. It has five positions, namely release, minimum reduction, full service, over reduction and emergency.

Maintenance Schedule

- Check for leak tightness at inlet, outlet and exhaust port on the pipe bracket.
- Check the operating handle movement; it should be free of undue resistance.
- The pressure setting must be checked and reset, if necessary.
- Check the five position movement of the handle and the pressure in each position.
- Check the emergency position repeatedly for complete and instant operation.

Yearly schedule

- The A-9 automatic brake valve should be dismantled from the OHE car cabin and overhauled as per procedure

I.O.H

- Replace all rubber components to overhauling.

P.O.H

- Replace A9 brake valve

18.2) SA-9 Independent Brake Valve

The SA-9 independent brake valve is a compact, self-lapping pressure maintaining straight air brake valve which performs the function of graduating the application or release of the OHE CAR air brakes.

Monthly Schedule

- Check the operating handle movement; it should be smooth and without any undue resistance.
- The pressure setting must be checked and reset, if necessary.
- Check the two position movement of the handle. Check for air pressure leakage in the valve. Half yearly schedule.
- The SA-9 independent brake valve should be dismantled from the OHE CAR and overhauled as per procedure.

I.O.H

- Replace all rubber components to overhauling.

P.O.H

- Replace new SA9 brake valve

18.3) C3W Distributor Valve

The C3W distributor valve is a diaphragm operated, self-lapping valve that functions to supply and exhaust compressed air in proportion to the control air pressure in the signal port.



Maintenance Schedule

- Test the sensitivity of the relay valve functioning for the changes in control, by checking the delivery pressure for different control pressures.
- Ensure that there is no leakage in the valve.

Yearly Schedule

- The C3W distributor valve should be dismantled from the OHE CAR and clean dust from port filters.

I.O.H

- Replace all rubber components, if found damaged in addition to overhauling.

P.O.H

- Replace with new C3W valve.

18.4) D-1 Auto Drain Valve

The D-1 automatic drain valve automatically discharges condensate and moisture from a reservoir with each opening cycle of the compressor control device.

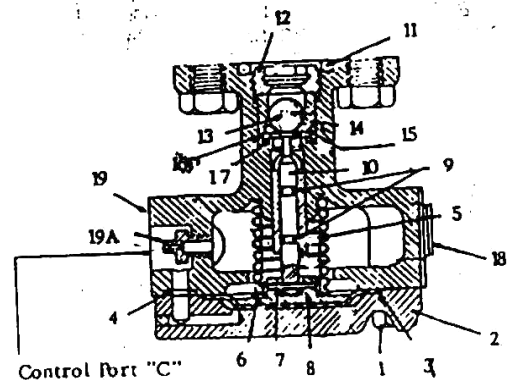


FIGURE-1

Maintenance Schedule

No separate maintenance schedule is required to check the performance of the valve. However, the valve can be actuated manually by pressing the manual over-ride feature provided on the magnet valve for compressor governing pressure switch.

Yearly Schedule

- The D-1 auto drain valve should be dismantled from the OHE CAR and overhauled as per procedure

I.O.H

- Replace all rubber components, in addition to overhauling.

P.O.H

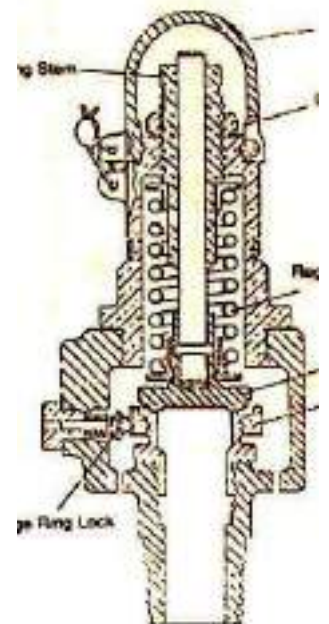
- Replace with new D-1 Valve

18.5) J-1 Safety Valve

The J-1 safety valve, when properly installed in the main reservoir piping, functions to prevent the excessive buildup of main reservoir pressure by venting the excess pressure to atmosphere as soon as the pressure reaches the predetermined setting.

Maintenance Schedule

- Check the leakage in the safety valve.
- Check the set-up pressure and if necessary re-adjust the pressure setting.



Yearly Schedule

- The J-1 safety valve should be dismantled from the OHE CAR and overhauled as per procedure.

I.O.H

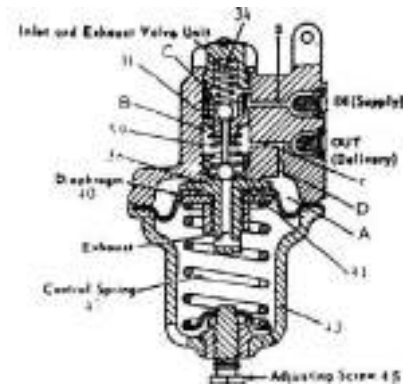
- Replace all rubber components, in addition to overhauling.

P.O.H

- Replace with new J-1 safety valve.

18.6) N-1 Reducing Valve

The N-1 reducing valve is a small capacity, self-lapping diaphragm operated type regulating valve and functions to reduce an air supply pressure, to that of a lower delivery pressure.



Maintenance Schedule

There is no specific maintenance procedure called to ensure the proper functioning of this valve, other ensuring whether the maximum brake cylinder pressure limited to whatever level set on the N-1 reducing valve.

Yearly Schedule

- The N-1 reducing valve should be dismantled from OHE CAR and overhauled as per procedure

I.O.H

- Replace all rubber components in addition overhauling.

P.O.H

- Replace new N-1 Reducing valve

18.7) Double Check Valve

It is a simple device with three port and very few components in the assembly. When two independent signal pressures are required to actuate the same control port of another device one a time, double check valve is used.

Monthly schedule

With the system fully charged, move the handle of SA-9 independent brake valve to minimum service position and allow the brake cylinder pressure to stabilize. Then make a full service application with the graduated hand control valve and observe that the brake cylinder pressure increase to whatever is allowed by the later. Release brakes at the graduated hand control valve fully. The brake cylinder pressure will drop down and again stabilize at the value corresponding to the pressure due to the minimum service position of the independent brake valve. Move the independent brake valve handle to release position and observe that the brake cylinder pressure reduces to zero completely.

Yearly schedule

- The double check valve should be dismantled from the OHE car and overhauled as per procedure

I.O.H

- Replace all rubber components, in addition to overhauling.

P.O.H

- Replace with new double check valve.

19. TROUBLE SHOOTING

19.1) TROUBLE SHOOTING OF ENGINE

Hard starting or failure to start

1. Out of fuel or air in fuel line.
2. Poor quality/grade of fuel.
3. Air leaks in suction lines.
4. Restricted fuel lines.
5. Broken fuel pump drive shaft.
6. Faulty EDC.
7. Cracked injector body or cup.
8. Water in fuel and/or waxing.
9. ECU calibration incorrect.
10. Long idle periods.
11. Gasket blow by or leakage.
12. Valve leakage / adjustment bad.
13. Broken or worn piston rings.
14. Engine due for overhaul.
15. Incorrect valve and injection timing.

Engine Miscellaneous

1. Poor quality fuel/grade of fuel.
2. Air leaks in suction lines.
3. Faulty EDC.
4. ECU calibration and power relay faulty.
5. Restricted fuel lines.
6. Plugged injector spray holes.
7. Cracked injector body or cup.
8. Damaged injector O-ring.
9. Water in fuel water/or waxing.
10. Injector flow incorrect
11. Long idle periods
12. Gasket blow -by or leakage
13. Valve leakage / adjustment bad
14. Broken or worn piston rings
15. Injectors valve and injection timing

Excessive black smoke at idle

1. Struck drain valve
2. Restricted fuel lines
3. Plugged injector spray holes
4. Wrong injector cups
5. Cracked injector body or cup
6. Faulty EDC control
7. Long idle periods
8. Gasket blow by or leakage
9. Broken or worn piston rings
10. Worn or scored liners or pistons
11. Broken/bent push rod or cam box

Low power or loss of power

1. Restricted air intake
2. High exhaust back pressure
3. Thin air in hot weather or high attitude
4. Air leaks between cleaner and engine
5. Malfunctioning of turbocharger
6. Poor quality fuel /grade of fuel
7. Air leaks in suction lines
8. Restricted fuel lines
9. Plugged injector spray holes
10. Faulty EDC control
11. Wrong injector cups
12. Cracked injector body or cup
13. Damaged injector O-ring
14. Fuel pump calibration incorrect
15. Injector flow incorrect
16. Faulty common rail pressure sensor
17. Dirty filters/screens/breather
18. Long idle periods
19. Engine overloaded
20. Gasket blow by or leakage
21. Valve leakage / adjustment bad
22. Broken or worn piston rings
23. Incorrect bearing clearance
24. Engine due for overhaul
25. Incorrect valve and injection timing
26. Worn or scored liners or pistons
27. Injectors need adjustment.

Low air output

1. Restricted air intake
2. Thin air in hot weather or high attitude
3. Air leaks between cleaner and engine
4. Dirty turbocharger compressor

Low oil pressure

1. External and internal oil leaks
2. Dirty oil filter
3. Clogged oil internal passages
4. Oil suction line restriction
5. Faulty oil pressure regulator
6. Faulty oil pressure sensor
7. Crankcase low or out of oil
8. Wrong grade oil for weather conditions

Coolant temperature too high

1. Crank case low or out of oil
2. Insufficient coolant
3. Improper grade of coolant
4. Engine overload
5. Faulty thermostats
6. worn water pump impellor

7. Damaged hose/loose belts
8. Damaged pipe coupling
9. Exterior leaks/air in system
10. Low cooling capacity due to choked radiator
11. Engine exterior dirty

Oil temperature too high

1. Engine overload
 2. Improper grade of oil used
 3. Crank case low or out of oil
 4. Oil level too high
 5. Insufficient coolant/worn pump
 6. Faulty thermostats
 7. Damaged hose/loose belts
 8. Clogged oil cooler or water passages
 9. Exterior leaks/air in system
 10. Low cooling capacity due to choked radiator
- Engine exterior dirty

19.2) TROUBLE SHOOTING OF TRANSMISSION : (Model: CRT 5633 MAKE: AVTEC)

S. No	CAUSE	REMEDY
A. LOW CONVERTER OUT PRESSURE		
1	Low oil level	Add oil to proper level
2	Oil line leakage	Check for leaks
3	Clogged magnetic oil strainer/oil filters	Clean magnetic oil strainer/replace oil filters
4	Defective oil pump	Rebuild oil pump assembly
5	Aerated oil	Air leaks in suction passages, bad grade of oil used.
B. HIGH OIL TEMPERATURE		
1	Low Or High Oil Level	Restore oil to proper level, bad grade/quality of oil.
2	Low Coolant Level	Add coolant. Check for leaks
3	Low Convertor out pressure	Refer "A"
4	TC cooler line kinked or clogged	Clean or replace cooler lines
5	Operating speed too high	Downshift to lower range
6	Torque convertor starter locked	Check converter components
7	Engine overloaded /overheating	Refer engine manual
C. HIGH STALL SPEED(engine rpm rises but vehicle movement is slow)		
1	Oil level low	Add oil to proper level
2	Low conv. Out pressure	Refer to "A"
3	High oil temperature	Refer to "B"
4	Clutch slipping	Overhaul transmission
D. LOW STALL SPEED(engine rpm not rising and vehicle speed is slow)		
1	Low engine output	Refer engine manual
2	Broken convertor parts	Overhaul transmission
3	Stator reversed	Overhaul transmission

S.No	CAUSE	REMEDY
V. LOSS OF TORQUE AT TRANSMISSION OUTPUT		
1	Stator reversed	Overhaul transmission
2	Low conv. Out pressure	Refer to "A"
3	Low engine power	Refer to "D"
4	Clutch slippage	Refer to "G"
5	Linkage not adjusted	Adjust pneumatic cyl. linkage
VI. NO POWER AT TRANSMISSION OUTPUT		
1	Linkage Not Adjusted	Adjust pneumatic cyl. linkage
2	Low Clutch Pressure	Refer to "G"
3	Mechanical Failure	Overhaul transmission
VII. LOW CLUTCH PRESSURE		
1	Low oil level/bad grade of oil	Add oil to proper level/ use proper grade of oil
2	Aerated oil	Refer to "A-5"
3	Oil leakage	Check for leakage
4	Main pressure regulator valve defective	Overhaul valve assembly
5	Defective oil pump assy.	Rebuild oil pump assembly
6	Linkage not adjusted	Adjust pneumatic cyl. linkage
VIII. NO POWER TRANSMITTED IN ONE GEAR RANGE		
1	Range clutch failed	Overhaul transmission
IX. HIGH CONVERTOR OUT PRESSURE		
1	Restricted TC cooler & pipe line	Check TC cooler & pipe line for blockage
2	Lubrication regulator valve sticking	Inspect valve components correct fault
X. VEHICLE OPERATES IN LOW RANGE FORWARD OR REVERSE BUT STALLS IN OTHER RANGES		
1.	Failed low range clutch	Overhaul transmission
XI. VEHICLE OPERATED IN INTERMEDIATE RANGE FORWARD OR REVERSE BUT STALLS IN OTHER RANGES.		
1.	Failed int. range clutch	Overhaul transmission
XII. VEHICLE OPERATES IN HIGH RANGE FORWARD OR REVERSE BUT STALLS IN OTHER RANGES		
1.	Failed high range clutch	Overhaul transmission
XIV. VEHICLE OPERATES IN FORWARD BUT STALLS IN REVERSE		
1.	Failed forward clutch	Overhaul transmission
XV. VEHICLE OPERATES IN REVERSE BUT STALLS IN FORWARD		
1	Failed reverse clutch	Overhaul transmission

19.3) TROUBLE SHOOTING OF THE ELECTRICAL SYSTEMS

Trouble Shooting of the Starter Motor

Failure of the engine to start may be attributed (treated) not only to the faulty starter motor but also to other system faults such as battery, switches, ECU's ,EDC controller wiring connections, ignition systems or fuel supply etc. Make sure that the trouble does not lie elsewhere before attempting to test the starter motor.

The following are some useful hints for dealing with trouble limited to starter motor, such as

Defect 1: When starter motor is operated its shaft fails to rotate or rotates slowly and the starter motor does not crank the engine through pinion has engaged with ring gear.	
Cause	Action - Remedy
a) Discharge/defective battery.	Recharge battery/substitute a fully charged battery.
b) Defective/loose connections.	Tighten all connections.
c) Dirty, oily or badly burnt commutator	Remove the starter for further inspection.
d) Starter terminal or brush box having an earth fault.	- do -
e) Defective, solenoid switch.	- do -
f) Defective armature field coils.	- do -
Defect 2: Armature rotates but pinion fails to engage.	
Cause	Action - Remedy
a) Improper pinion engagement	Clean it.
b) Burr formation on pinion or ring gear	De burr it by filing
c) Defective auxiliary coil.	Change auxiliary coil.
d) Loose mounting.	Tighten mounting/units
e) Worn commutator end/drive end bush	Change the bush
f) Commutator bearing pin loose.	Check the tightness of bearing pin fixing screw.
Defect 3: Starter motor continuous running after release of ENGINE START switch.	
Cause	Action - Remedy
a) Sticky starting switch.	Open starter motor isolating knife switch immediately and repair/replace switch.
b) Short in wiring harness	Replace faulty wiring.
c) Dry-drive end bush	Trace cause and lubricate
d) Sticky solenoid switch contacts.	Remove the starter for solenoid inspection.
e) Bush in pinion seized on shaft.	Remove the starter for inspection.
f) Pinion/ring gear fouled or damage.	Clean thoroughly, de burring of pinion and ring gear by filing.

Defect 4: Pinion engage but starter motor does not crank the engine (whining noise is heard)	
Cause	Action - Remedy
a) In sufficiently charged battery/corroded terminals.	Recharge the battery/clean terminal and smear petroleum jelly.
b) In sufficient pressure on carbon brushes or worn out brushes.	Change the brush springs/brushes.
c) Shorted/earthling armature	Change armature
d) Slipping clutch assembly	Change clutch assembly.
e) Partially earthling field coil.	Change starter motor
f) Solenoid contact bad.	Re-set solenoid and replace spring.
Defect 5: Engine is not cranking	
Cause	Action - Remedy
a) Weakened battery	Check the voltage of the battery charge it if required.
b) Emergency stop switch is ON	Ensure all emergency stop switches are in OFF position
c) Malfunctioning of ENGINE START switch	Check and replace if necessary.
d) Faulty fuel solenoid	Check and replace if necessary.
e) Faulty magnetic switch	Check and replace if necessary.
f) Faulty starting motor solenoid	Check and replace if necessary.
g) Faulty starter motor	Check and replace if necessary.
h) Faulty engine starting relay	Check and replace if necessary.
Defect 6: Engine Does Not Stop	
Cause	Action - Remedy
a) Faulty ENGINE/START-STOP key	Check and replace if necessary.
b) Faulty emergency stop switch	Check and replace if necessary.
Defect 7: Even Though Lub Oil Pressure Is More, Engine Does Not Sustain (Stops After Releasing The Start Push Button)	
Cause	Action - Remedy
a) Faulty low water level switch	Check and replace if necessary.
b) Faulty low water level relay	Check and replace if necessary
c) Faulty over speed switch	Check and replace if necessary.
d) Faulty lub oil pressure relay	Check and replace if necessary
e) Faulty low hydraulic oil level	Check and replace if necessary.
f) Faulty HLR relay	Check and replace if necessary
Defect 8: Engine Throttles In High Range But Car Does Not Move (Transmission Do Not Engage)	

Probable Cause	Remedy
a) Defective pneumatic solenoid valve & control linkages of cylinders	Check and replace.
b) Defective/sticky clutch cut off valve	Check and replace
Defect 9: Brake Applied Indication Does Not Extinguish Even After All The Brakes Are Released.	
Probable Cause	Remedy
a) Defective service brake pressure switch	Check and replace
b) Defective parking brake pressure switch	Check and replace
c) Disturbed pressure settings in pressure switch	Check settings. and verify for Proper
Defect 10: Engine Throttle Does Not Take Place Even After The Throttle Handle Is Moved	
Probable Cause	Remedy
a) Defective relay	Check and replace
b) Defective timer relay	Check and replace
c) Defective solenoid	Check and replace
Defect 11: Car Does Not Move When Selected "Low" In The "Range Selector" Even After Direction Engaged Indication Is Confirmed	
Probable Cause	Remedy
a) Defective relay	Check and replace
b) Defective timer relay	Check and replace
c) Defective gear solenoid	Check and replace
d) Defective clutch cut off valve	Check and replace
Defect 12: Cabin Does Not Charge	
Probable Cause	Remedy
a) Defective cabin selector switch	Check and replace
b) Defective relay	Check and replace.
c) Defective drivers key switch	Check and replace
Defect 13: Head Light Does Not Glow	
Probable Cause	Remedy
a) Defective head light switch	Check and replace
b) Defective diode stack unit	Check and replace diode in that particular fault line.
c) Defective relay contact	Check and replace relay/and on block.



PHOOLTAS TRANSRAIL LIMITED

RAIL BOUND MOBILE VEHICLE (8 -WHEELER)

MODEL : RBMV.02.B

G A U G E : 1676 mm



OPERATION MANUAL

REFERENCE NO. OM/302B/3K23, REV.: -00

(All Right Reserved With Phooltas To Amend This Manual Any Time And To Issue It With Rev. No.)

 phooltas
 phooltas
 info@phooltas.org
 www.phooltas.org



B.O: Plot No.- 1A, Sector-7,IIE, SIDCUL, Haridwar, Uttarakhand-249403 (INDIA)
H.O.: Layak Enclave (East), Sahay Nagar, Phulwari Sharif, Patna Bihar-801506 (INDIA)

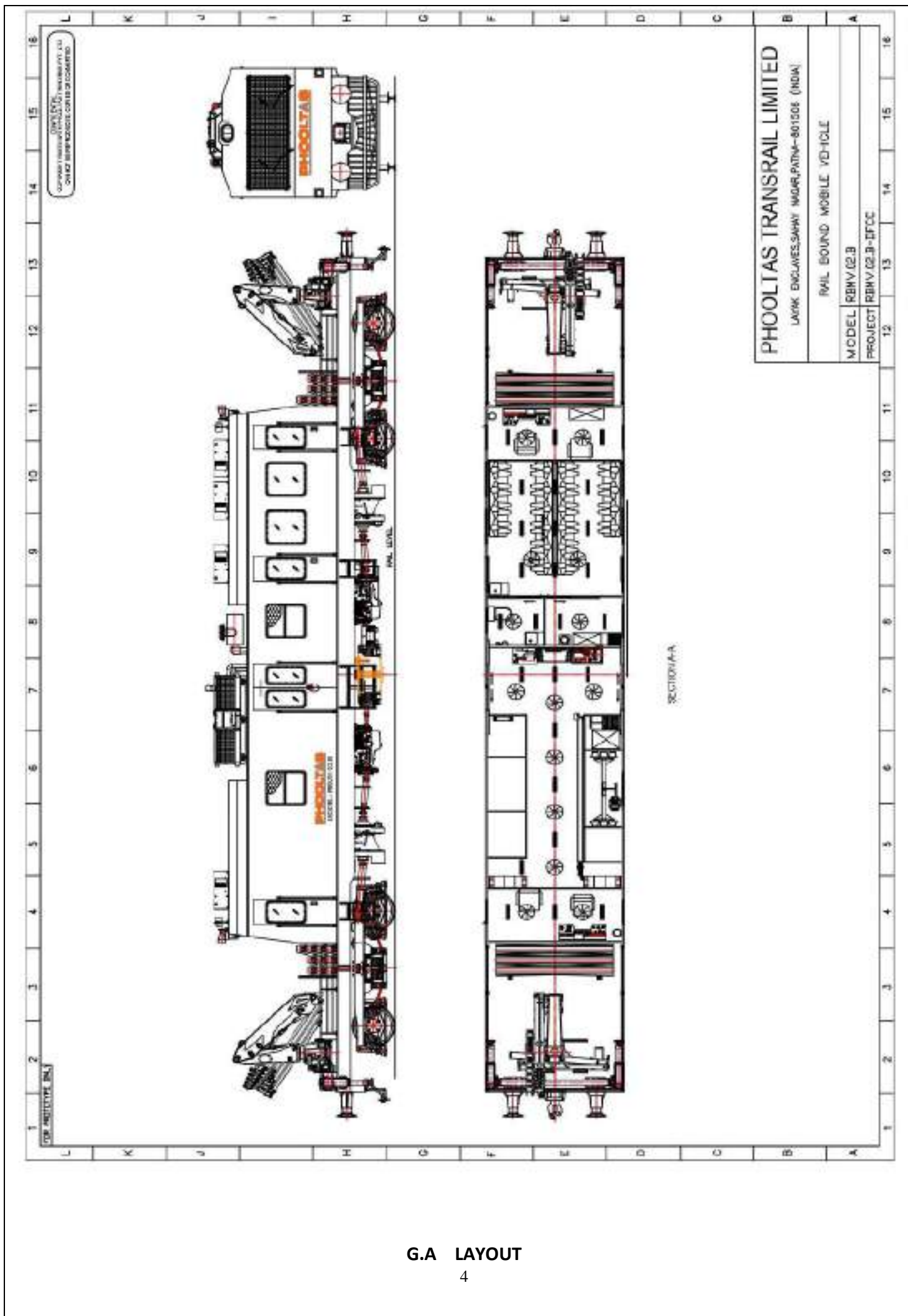
1. INTRODUCTION

PHOOLTAS make Rail Bound Mobile Vehicle with MMU equipment (Model-RBMV.02.B) is a 8 Wheeler, twin power pack, self-propelled car. RBMV is idle vehicle for rail track civil maintenance work to run on B.G schedule of DFCC network. RBMV has been provided with hydraulic knuckle boom crane (Total 2 Nos) i.e., one no. each end on RBMV. RBMV and its mounted cranes are suitable to load – unload rail maintenance material at required site from loading platform and attached BFRS which are usually used for shipping at track site construction and maintenance work. RBMV is equipped with multiple maintenance units (MMU) and various other necessary tools & spares which are used in emergency and routine maintenance-inspection of track. Therefore proper maintenance of RBMV is necessary to ensure the reliability and availability in emergency and for regular maintenance work of track. This Operation and Maintenance manual of 8 Wheeler RBMV has been prepared with the objective of making operating personnel aware to correct operation and maintenance techniques adopted in field.

This vehicle has been provided with two knuckle boom crane with load lifting capacity (1 ton at 15M reach), suitable storage rack, cubical, cupboards, pigeon box for MMU tools and spares track maintenance work. Vehicle has been equipped with A.C cabins for Crew and drivers which is an ideal vehicle for RBMV work.

2.INDEX

S.No.	Description	Page No.
1	Introduction	2
2	Index	3
3	G.A Layout	4-5
4	General Safety Rules	6
5	Vehicle Basic Data	7
6	Power Train	8
6.1	Engine & Accessories	8
6.2	Air Intake	9
6.3	Engine Lubrication	9
6.4	Exhaust	9
6.5	Cooling System	10
6.6	Engine Fuel System	10
6.7	Electricals	10
6.8	Engine Controls	11
6.9	Hydrodynamic Transmission	11
6.1	P.T.O Gear Box For Crane Pump Drive	12
6.11	Transmission ADGB Coupling	12
6.12	Engine Transmission Coupling	12
6.13	Axle Drive Gear Box (Hydrodynamic Driven)	13
6.14	Non-Powered Axle	14
6.15	Vehicle Mounted Crane	15
6.16	Crew Cabin	15
6.17	Material Cabin	15
6.18	Bio Toilet & Pantry	15
6.19	Gen Set 3 KVA 220v Ac (Single Phase)	16
6.2	Underframe	16
6.21	Body	16
6.22	Driver's Cab	16
6.23	Suspension System	16-17
6.24	Electric System	17
6.25	Brake System	17-18
6.26	Air Compressor	18
6.27	Controls Panel 1	19-22
6.28	Controls Panel 2	22-24
7	Operation	25
7.1	Operation of Vehicle	25
7.2	Direction Reversing Safety	26
7.3	Operation of VCD	26-29
8	Pneumatic System	30-34
9	Hydraulic System	35-37
10	Electrical System	38-90
11	Instructions for Driver / Operator	91



G.A LAYOUT

3. GENERAL LAYOUT

S. No.	Components	Qty.
1.	Engine	02
2.	Transmission	02
3.	Cardan Shaft – 1 (Trans To ADGB)	02
4.	Cardan Shaft – 2 (Engine To Trans)	02
5.	Cardan Shaft – (Auxiliary Alt. Drive)	02
6.	Axle Drive Gear Box (Hydrodynamic Drive)	02
7.	Bogie	02
8.	Wheel	08
9.	Coil Spring Suspension Assembly	08
10.	Clasp Type Brake Assembly	08
11.	Air Cleaners	02
12.	Radiator, Roof Mounted	01
13.	Air Compressor (Engine Mounted)	02
14.	Auxiliary Alternators, Kel 4.5 Kw, 110v/ Equivalent	02
15.	Hydraulic Tank With Oil Cooler	01
16.	Coolant Tank 100 Lts. With Water Fitting Arrangement To Radiator	01
17.	Water Raising Apparatus	01
18.	Fuel Tank – 700 Ltrs.	01
19.	110v Battery Box	01
20.	T.C Cooler	02
21.	Driver's Seat	02
22.	Cattle Guard	02
23.	Control Panel	02
24.	Foldable Seats	02
25.	Fixed Railing	12
26.	Camera	02
27.	Horn	02
28.	Stabilizers	04
29.	Hand Holds	16
30.	Flasher Lights	02
31.	Foot Steps	08
32.	Tool Box	02
33.	Crew Seats	20
34.	C.B.C Couplers	02
35.	Fire Extinguishers	02
36.	Crane	02
37.	Air Conditioner	04
38.	Buffers	04
39.	Marker Light	04
40.	Lifting Bracket	04
41.	Electrical Wiper And Washer Assembly (2 Front & 2 Rear)	04
42.	Head Lights	02
43.	Rail Guard Arrangement	02
44.	Rail Water Cutter	04
45.	CAB – 1	01
46.	CAB – 2	01
47.	Swing Door (Cabin & Staff Room)	06
48.	Sliding Door (Middle)	02

4. GENERAL

This manual is required to pay attention and followed by the operator and supervisor for ensuring efficient and trouble-free operation of the plant.

This manual is required to be carefully preserved for all the time along vehicle, so that, whenever it become necessary, it can be referred for operational pre-requisites and recommended maintenance instructions and schedules.

SAFETY RULES

Most accidents are caused by someone due to failure of following simple and fundamental safety rules or precautions.

Regardless of the care used in the design and construction of the machinery, there are many points that cannot be completely safeguarded.

A careful operator is the best insurance against an accident.

THE COMPLETE OBSERVANCE OF ONE SIMPLE RULE WOULD PREVENT MANY SERIOUS ACCIDENTS.

THE RULE IS

NEVER ATTEMPT TO CLEAN OIL, OR ADJUST ANY MACHINE PART WHILE IT IS IN MOTION.

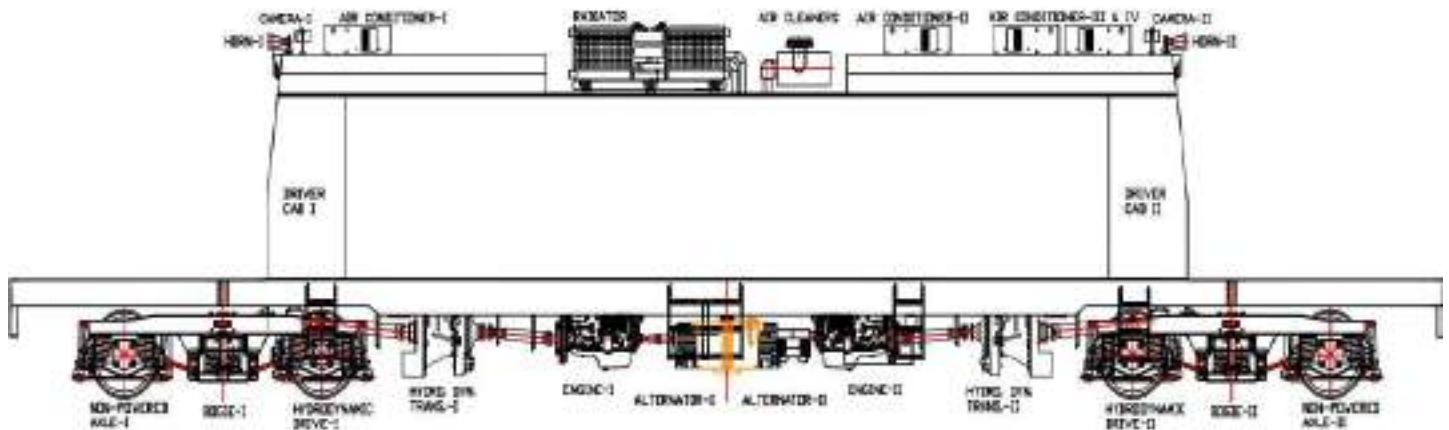
5. Vehicle Basic Data

1	Track gauge	1676 mm
2	Overall length	21000 (Over body)
3	Overall width	3245 mm
4	Overall height	4245 mm
5	Wheel Base	14783 (CRS of bogie) 2896 (Bogie wheel base)
6	Max. weight	68 000 kg (Tare) 80 000 kg (Gross)
7	No. of Axles	4 (2 Powered & 2 Non-Powered) (Bo- Bo type)
8	Maximum Axle load	20 tons
9	Wheel diameter	952 mm
10	Engine Power	450 HP x 2 Nos.
11	Maximum Operating Speed	100 km/h on level track (Hydrodynamic)
12	Curve	10 deg.
13	Super elevation	185 mm
14	Maximum cant deficiency	100 mm
15	Grade ability	3% with trailing load
16	Crane	Hydraulic knuckle boom crane floor mounted having 360 degree slewing with lifting capacity of 1000 kgs. at 15 mtrs radius with feature with height and slew restriction. Control Radio remote and manual. Accessories lifting hook.

6. POWER TRAIN

The Power Train of the 'PHOOLTAS' RBMV is provided with twin power packs, each consisting of the following:

Power from the Engines are transmitted to the attached Hydrodynamic, Driven axle drive gear boxes through Cardan Shafts to powered bogies either side.



6.1) ENGINE & ACCESSORIES

The RBMV is powered by a diesel engine of Ashok Leyland make, model NEP.-6 developing 450 HP at 2200 rpm. The engine is equipped with a suitable flywheel and flywheel housing to match the Hydrodynamic Transmission. The engine is suitably matched with the torque converter.



A.L Engine (i)



A.L Engine (ii)

6.2) AIR INTAKE

The air intake of the engines are equipped with an air cleaner and roof mounted composite radiator with charge air cooler (CAC) which provides cooler, sensor intake of air for more efficient combustion and reduced internal stresses for longer life.



Air Intake

6.3) ENGINE LUBRICATION

The engine lubricating system comprises of an oil-sump, integral engine lubrication pump oil pump, full flow lube oil-filter and a lube oil cooler. The lubricating system is suitably pressurized.



Engine lubrication

6.4) EXHAUST

The engine exhaust is discharged onto the track through an exhaust manifold and an axial flow silencer. Care is taken to limit the exhaust back pressure to a pre-determined value to ensure optimum engine performance and prevent over-heating.



Silencer

6.5) COOLING SYSTEM

The cooling system serves to protect the Engine and Hydrodynamic transmission (engine oil and transmission oil) against over-heating and ensures optimum performance by regulating the operating temperature to the prescribed limits. Cooling water from the engine flows into the radiator. The water is cooled due to air-flow across the radiator. The cooled water maintains the lube oil temperature within the prescribed limits. The hot Transmission oil flow is cooled by engine coolant in line mounted T.C. oil cooler. The cooling system also incorporates a water pump and a thermostat. The system is adequately vented and pressurized to prevent any possibility of cavitation.

A battery operated coolant-raising pump with coolant tank is provided to fill coolant in radiator as required.



Radiator

6.6) ENGINE FUEL SYSTEM

A bigger diesel tank with suction strainer, water separator with hand prime pump, and fuel line filter are provided for both engines.



Engine fuel system

6.7) ELECTRICALS

- i. The engine starting and its electronics and E.C.U control system is 24V D.C comprising of battery bank, charging alternators of 100 amps capacity and electric starter.
- ii. RBMV has 110V Aux. Alternator and battery 120 A.H for Aux. Electrical loaded

6.8) ENGINE CONTROLS

The engine is equipped with electronics throttle, C.C.U unit , E.C.U. unit, power changed over, relay box electronic display unit with RPM, oil pressure, battery charging indicator, water temperature and engine safety switches, low coolant level indicator and others control.



C.C.U



E.C.U

6.9) HYDRODYNAMIC TRANSMISSION

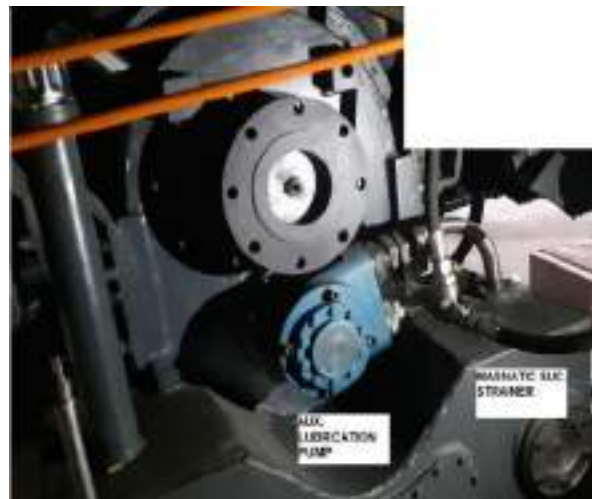
Each Engine CRT 5633 of AVTEC Make, Hydrodynamic Transmission that allows for nearly equal speeds in forward and reverse directions. The transmission is matched with the engine. The gear shifting from low to high & vice versa automatic and manual feature has been provided. The transmission are remotely mounted. Engine has a standard Fly wheel & housing with flexible coupling to drive cardan shaft connected to hydrodynamic transmission input which allow smooth torque transmission at full power. The transmission is provided with an output flange connected to the Axle Drive Gear box mounted on the inner axle of both bogies through suitable cardan shafts. The heat generated in the transmission oil is dissipated through T.C- oil cooler in radiator coolant.

Hydrodynamic transmission has integral oil sump with Aux. Lubricating oil pump.

Hydraulic power provided to radiator fan drive hydraulic motor and hydraulic crane by hydraulic pumps mounted on transmission P.T.O's



Hydrodynamic Transmission



Transmission Aux. Lubrication pump

6.10) P.T.O GEAR BOX FOR CRANE DRIVE PUMP

Transmission side window has been provided with a P.T.O gear box which drives hydraulic pump for crane operation.



PTO Gear Box for Crane Drive Pump



Crane Drive Pump

6.11) TRANSMISSION TO ADGB COUPLING

Transmission to axle drive gear box is powered by robust cardan shaft.



Cardan shaft

6.12) ENGINE TO TRANSMISSION COUPLING

A Vulcan flexible coupling is fitted engine. A suitable cardan shaft is connected to this flexible coupling and transmission input flange.



Vulcan flexible coupling



Cardan shaft

6.13) POWERED AXLE WITH AXLE DRIVE GEAR BOXE WITH WHEEL AND AXLE BOX (HYDRODYNAMIC DRIVEN)

The Axle Drive Gearbox is of double reduction type consisting of a helical spur gear primary stage and a spiral bevel crown gear fitted on to the Axle. Power from the Cardan Shaft is transmitted to the crown gears through the bevel pinion through the primary spur gear reduction.



Wheels, Axles, Axle Boxes And ADGB Hydrodynamic

WHEELS

The RBMV has 8 wheels of 952 mm diameter confirming to IRS-19/93. The wheels are of solid rolled type. The wheel profile confirm to RDSO Drg. No. SK-91146. The wheels are hydraulically pressed onto the axle. The RBMV is a 8 Axle Vehicle with each inner axles are powered of both bogies and each outer axle are non-powered. The powered axles conform to IRS-43-92. Adequate precautions are taken during the design to account for the shocks and stresses to which the axle is subjected.

AXLE BOXES

Each axle box is provided with one spherical Roller bearing encased in end covers for protection against dust, weather etc. Axle box Construction is wing type standard for IR which has seats for helical coil springs, and guide- ways for the suspension system. Both lateral and longitudinal guidance is provided at the axle box.

TORQUE ARM

Torque arms are provided over the axle drive gear boxes to provide a reaction against twisting action.

One end of each arm is connected to the respective axle-drive-gear box body bracket through a radial spherical bearing and the other end is connected to the under frame through suitable rubber elements.

6.14) NON-POWERED AXLE WITH WHEEL AND AXLE BOX

Non-powered axle wheel Assembly Is fitted with each bogie as vehicle load shearing and brake performing. Each component in bogie's are fitted with as per IR standard.



NON-POWERED

WHEELS

The RBMV has 8 wheels of 952 mm diameter confirming to IRS-19/93. The wheels are of solid rolled type. The wheel profile confirm to RDSO Drg. No. SK-91146. The wheels are hydraulically pressed onto the axle. The RBMV is a 8 Axle Vehicle with each inner axles are powered of both bogies and each outer axle are non-powered. The powered axles conform to IRS-43-92. Adequate precautions are taken during the design to account for the shocks and stresses to which the axle is subjected.

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6.15) VEHICLE MOUNTED CRANE

Knuckle Boom crane capacity (Lift-1000kg at 15meters radius) Hydraulic knuckle boom crane has been mounted on floor (1nos each end of vehicle) with material lifting hook. Crane operation control is made by radio remote control, during failure of electronic control a manual lever operation of crane control feature is also available.

Any further information refer to hydrolift crane manual.



Knuckle Boom Crane



Crane Control Panel

6.16) CREW CABIN

One air condition crew cabin with seat & berth has been provided for crew comfort.

6.17) MATERIAL CABIN

Suitable storage rack for efficiency multiplier tools like abrasive rail cutter, heck saw rail cutter, drilling machine, chamfering kit, rail tensor, horizontal rail bender, rail straightener, sleeper space adjuster, concrete sleeper breaker with grinder, concrete sleeper drilling machine, hydraulic extractor of ERC, set of Jacks, Thermit welding suitable, weld trimmer, gas cutting etc.

6.18) BIO TOILET & PANTRY

Vehicle has been provided with one no. Bio Toilet & one pantry compartment for crew comfort. Water storage tank has been provided on roof top with water filling arrangement from either side has been arrange through check valve & water inlet neck.

6.19) GEN SET 3 KVA 220V AC (SINGLE PHASE)

A portable 3KVA genset is provided for hand drill tool & pantry equipment.



3 KVA 220V AC single phase dg set

6.20) UNDERFRAME

The under-frame is of structural steel. It is designed to withstand static and dynamic stresses under loaded conditions. Suitable camber is provided to compensate for deflection under load. All the principal assemblies are located on the under-frame to achieve longitudinal and lateral balancing, The RBMV under-frame is capable to withstand required end load applied at the buffer in gross condition.

The under-frame is fitted with component CBC & Buffers at both ends. The vehicle is designed to withstand a horizontal squeeze load of 102 tons applied at buffers.

Lifting pads and jacking-points are provided at suitable locations on the under-frame.

All steel used is as per IRS / RDSO Specifications.

6.21) BODY

The Body structure is made of pressed steel members or any other suitable material of required cross-sections as per IRS / RDSO Standards, welded together to form a firm and rigid structure, capable of withstanding the specified loads.

Free circulation of air is ensured between the outer-sheet and the inner paneling. Crew & driver and lobby area are air conditioned.

- (i) The Body skeleton is welded to the under-frame.
- (ii) The complete body is protected from corrosion and drumming effect.

6.22) DRIVER'S CAB

The Drivers' cabs are provided at both ends with control panel for driving the vehicle in both the directions. Driver's seat is of revolving type with adjustable height.

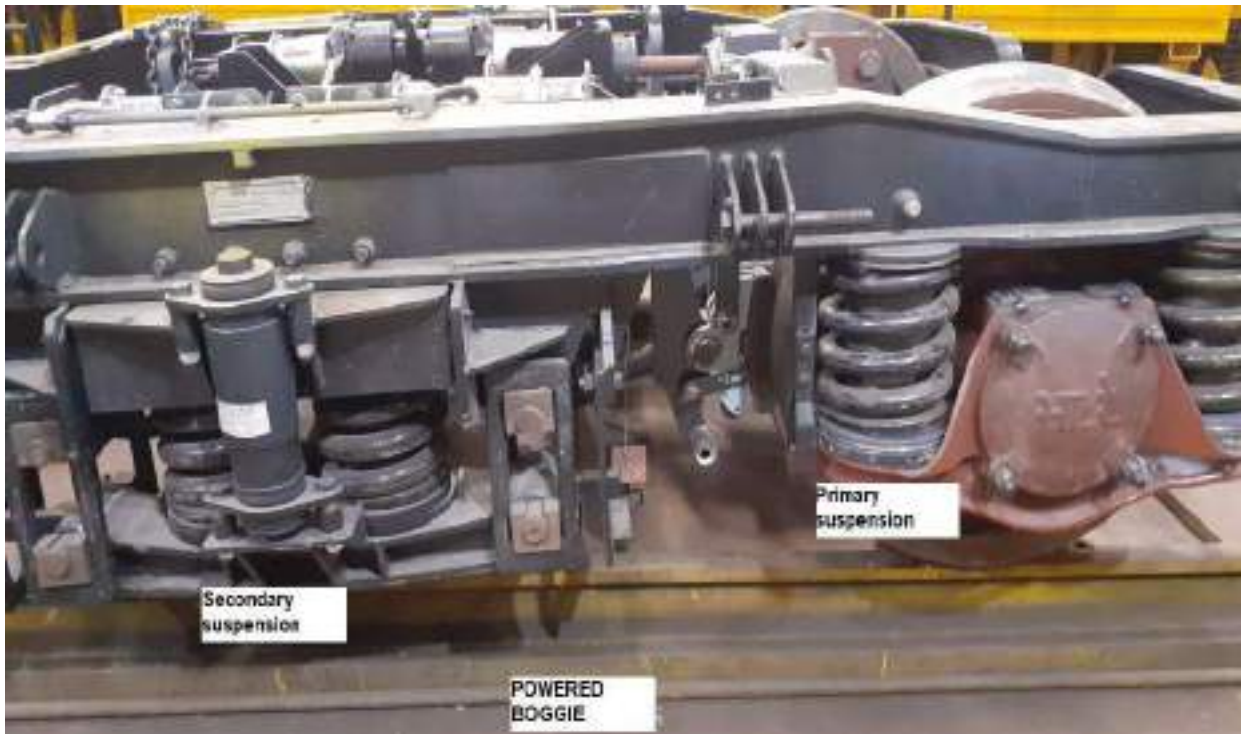
Driving cab and crew cabin are provided with air condition as per customer requirement.

6.23) SUSPENSION SYSTEM

The coil spring type primary & secondary with hydraulic dampers suspension system incorporated in the RBMV car to provide adequate riding comfort and safe running at maximum travel speeds.

Bogie-Bogie type arrangement is provided with both primary and secondary suspensions generally conforming to the design as per ICF specification for SV/DPC bogies. Relative motion between the under frame & bogies are guided along the vertical plane and the longitudinal movement is constrained within predetermined limits.

The entire suspension system is designed to sustain a dynamic augmentation.



Bogie Suspension System

6.24) ELECTRIC SYSTEM

24V DC system - Each Power pack of RBMV has a 24V electrical system 300Ah battery capacity for engine starting, engine control and hydraulic control with 24V battery charging alternator.

110V DC system - each power pack drives and aux. Alternator to charge 110V 120Ah battery capacity to cater the aux. Electrical load like head light, flasher lights, cab lights, fans & etc.



110V DC Battery box



24V DC Battery

6.25) BRAKE SYSTEM

The 'PHOOLTAS' RBMV is equipped with an effective single pipe graduated release air braking system having the following brakes: - A9 independent brake etc., SA9, Parking brake, Emergency brake, VDC and penalty brake.

- (i) Release position
- (ii) Minimum reduction position.
- (iii) Full service position
- (iv) Emergency position.



Brake control panel

6.26) AIR COMPRESSOR

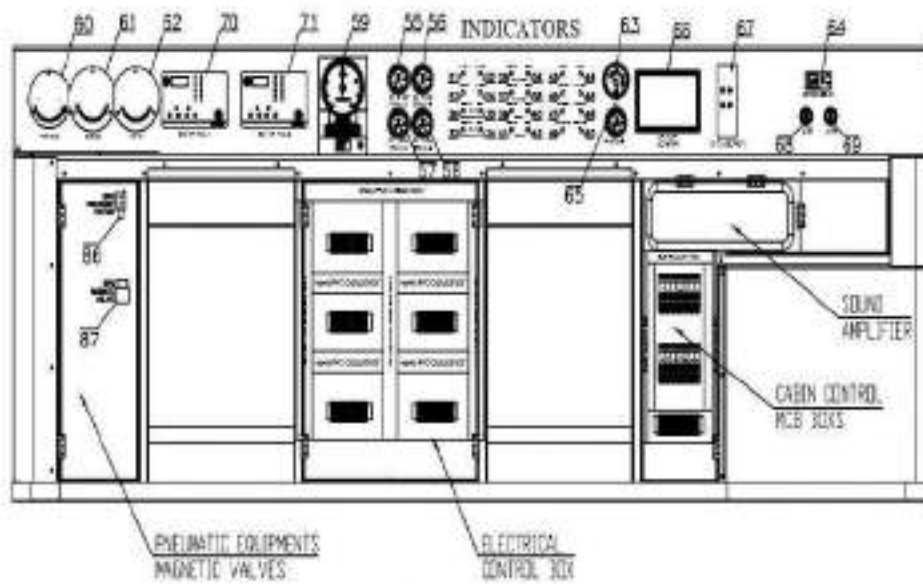
Engine mounted air compressors are provided with both engines. Displacement of each air compressor is 630cc per revolution. Air pressure Cut-in & cut-out are 7 kg/cm² & 8 kg/cm² respectively.



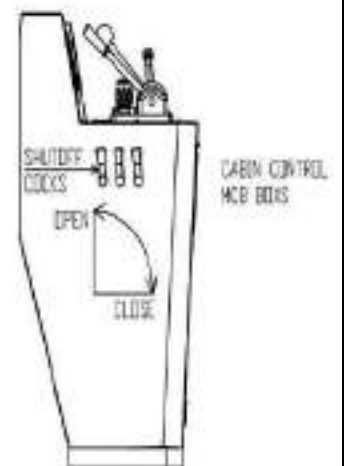
Air compressor

6.27) CONTROL PANEL

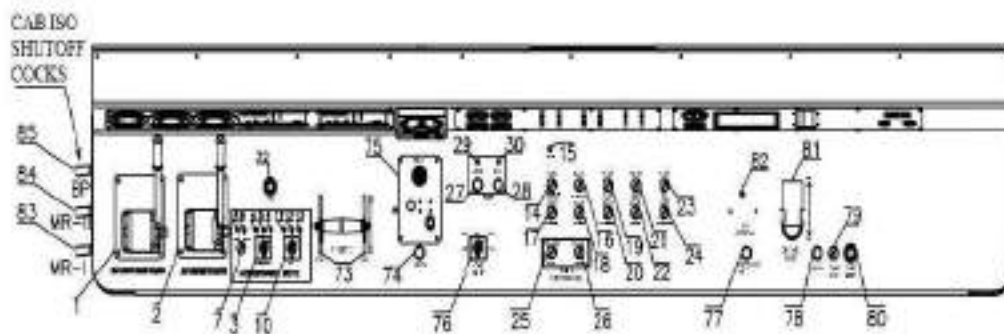
DRIVER CONTROL PANEL-I



FRONT VIEW



SIDE VIEW



TOP VIEW

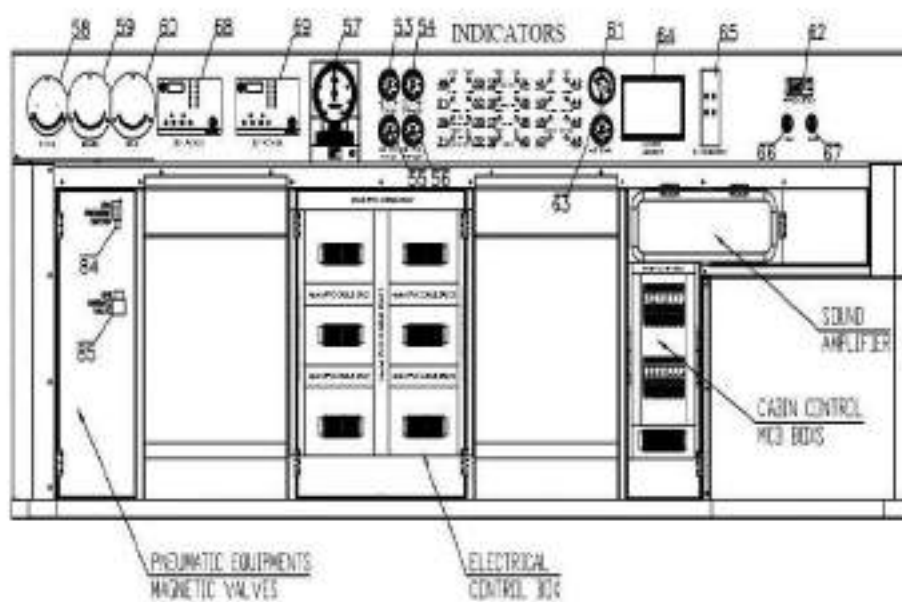
DRIVER CONTROL PANEL-I

S. No.	DESCRIPTION	Qty.
1	SA-9 BRAKE VALVE	01 No.
2	A-9 BRAKE VALVE	01 No.
3	ROTARY S/W FOR DIRECTION	01 No.
4	INDICATOR FOR FWD DIRECTION	01 No.
5	INDICATOR FOR NEU.	01 No.
6	INDICATOR FOR REV DIRECTION	01 No.
7	AUTO/MANUAL DRIVE SELECTOR S/W (HYDRODYNAMIC)	01 No.
8	INDICATOR FOR HYDRODYNAMIC MANUAL MODE ON	01 No.
9	INDICATOR FOR HYDRODYNAMIC AUTO MODE ON	01 No.
10	ROTARY S/W FOR GEAR SELECTION	01 No.
11	INDICATOR FOR LOW SPEED	01 No.
12	INDICATOR FOR MED SPEED	01 No.
13	INDICATOR FOR HIGH SPEED	01 No.
14	10 KMPH SPD. SELECTION SWITCH	01 No.
15	BRAKE APL. INDICATOR	01 No.
16	BY PASS SELECTION SWITCH	01 No.
17	MRK LIGHT SELECTION SWITCH	01 No.
18	TAIL. LIGHT SELECTION SWITCH	01 No.
19	W-LIGHT CAB-I SELECTION SWITCH	01 No.
20	FLASH LIGHT SELECTION SWITCH	01 No.
21	W-LIGHT CAB-II SELECTION SWITCH	01 No.
22	CAMERA SELECTION SWITCH	01 No.
23	OHE BYPASS SELECTION SWITCH	01 No.
24	WIPER MOTOR SELECTION SWITCH	01 No.
25	24V DC CABIN INTERLOCKING SELECTION SWITCH	01 No.
26	110 V CABIN INTERLOCKING SELECTION SWITCH	01 No.
27	PARKING BRAKE APPLIED PUSH BUTTON	01 No.
28	PARKING BRAKE RELEASE PUSH BUTTON	01 No.
29	INDICATOR FOR PARKING BRAKE APPLIED	01 No.
30	INDICATOR FOR PARKING BRAKE RELEASE	01 No.
31	INDICATOR FOR RADIATOR WATER LEVEL NORMAL ENGINE-I	01 No.
32	INDICATOR FOR RADIATOR WATER LEVEL LOW ENGINE-I	01 No.
33	INDICATOR FOR RADIATOR WATER LEVEL NORMAL ENGINE-II	01 No.
34	INDICATOR FOR RADIATOR WATER LEVEL LOW ENGINE-II	01 No.
35	INDICATOR FOR TRANSMISSION-I OIL TEMP. NORMAL	01 No.
36	INDICATOR FOR TRANSMISSION-I OIL TEMP. HIGH	01 No.
37	INDICATOR FOR TRANSMISSION-II OIL TEMP. NORMAL	01 No.
38	INDICATOR FOR TRANSMISSION-II OIL TEMP. HIGH	01 No.
39	INDICATOR FOR HYD. TEMP. NORMAL	01 No.
40	INDICATOR FOR HYD. TEMP. HIGH	01 No.

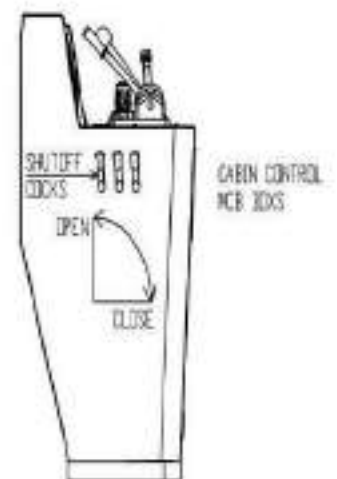
41	INDICATOR FOR HYD. LEVEL NORMAL	01 No.
42	INDICATOR FOR HYD. LEVEL HIGH	01 No.
43	INDICATOR FOR RRU-I	01 No.
44	INDICATOR FOR RRU-II	01 No.
45	INDICATOR FOR STAB.-I	01 No.
46	INDICATOR FOR STAB.-II	01 No.
47	INDICATOR FOR STAB.-III	01 No.
48	INDICATOR FOR STAB.-IV	01 No.
49	INDICATOR FOR CRANE-I ON	01 No.
50	INDICATOR FOR CRAN-II ON	01 No.
51	INDICATOR FOR 24V ON	01 No.
52	INDICATOR FOR 110V ON	01 No.
53	INDICATOR FOR E STOP-I	01 No.
54	INDICATOR FOR E-STOP-II	01 No.
55	TRANS. OIL TEMP. GAUGE-1	01 No.
56	TRANS. OIL TEMP. GAUGE-2	01 No.
57	TRANS. OIL PRESSURE GAUGE-1	01 No.
58	TRANS. OIL PRESSURE GAUGE-2	01 No.
59	SPEED CUM RECORDER	01 No.
60	PARKING GAUGE	01 No.
61	DUPLEX PRESS. GAUGE (BC1,BC2)	01 No.
62	DUPLEX PRESS. GAUGE (MR-BP)	01 No.
63	FULE LEVEL GAUGE	01 No.
64	AC DISPLAY	01 No.
65	HYD. TEMP. GAUGE	01 No.
66	TFT MONITOR	01 No.
67	OHE DEVICE	01 No.
68	USB POWER PORT 24V DC-I	01 No.
69	USB POWER PORT 24V DC-II	01 No.
70	ENGINE-I DISPLAY	01 No.
71	ENGINE-II DISPLAY	01 No.
72	ENGINE EMG. STOP SWITCH	01 No.
73	THROTTLE	01 No.
74	HORN PUSH BUTTON	01 No.
75	VCD RESET UNIT	01 No.
76	HEAD LIGHT SELECTION SWITCH	01 No.
77	SPEAKER OFF PUSH BUTTON	01 No.
78	HORN PUSH BUTTON	01 No.
79	EMG BRK. SELECTION SWITCH	01 No.
80	ENGINE EMG STOP SWITCH	01 No.
81	D-1 EMG BRAKE VALVE	01 No.
82	P.A SYSTEM	01 No.
83	MR-I	01 No.
84	MR-II	01 No.

85	BP	01 No.
86	EPG PRESSURE SWITCH	01 No.
87	EPG MAGNETIC SWITCH	01 No.

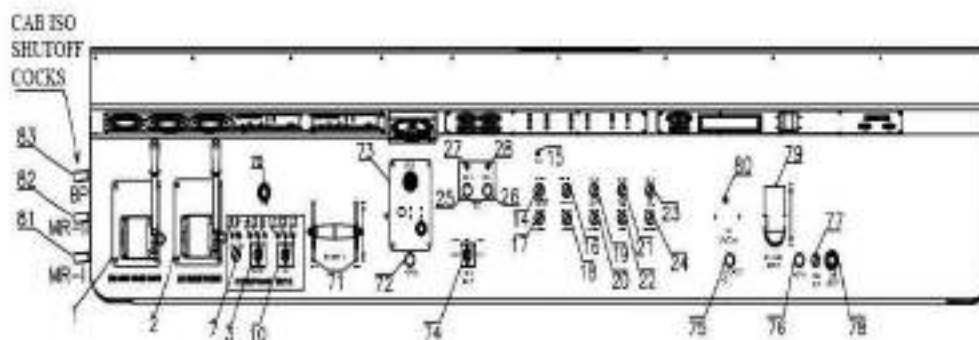
DRIVER CONTROL PANEL-II



FRONT VIEW



SIDE VIEW



TOP VIEW

DRIVER CONTROL PANEL-II

S. No.	DESCRIPTION	QTY.
1	SA-9 BRAKE VALVE	01 No.
2	A-9 BRAKE VALVE	01 No.
3	ROTARY S/W FOR DIRECTION	01 No.
4	INDICATOR FOR FWD DIRECTION	01 No.
5	INDICATOR FOR NEU.	01 No.
6	INDICATOR FOR REV DIRECTION	01 No.
7	AUTO/MANUAL DRIVE SELECTOR S/W (HYDRODYNAMIC)	01 No.
8	INDICATOR FOR HYDRODYNAMIC MANUAL MODE ON	01 No.
9	INDICATOR FOR HYDRODYNAMIC AUTO MODE ON	01 No.
10	ROTARY S/W FOR GEAR SELECTION	01 No.
11	INDICATOR FOR LOW SPEED	01 No.
12	INDICATOR FOR MED SPEED	01 No.
13	INDICATOR FOR HIGH SPEED	01 No.
14	10 KMPH SPD. SELECTION SWITCH	01 No.
15	BRAKE APL. INDICATOR	01 No.
16	BY PASS SELECTION SWITCH	01 No.
17	MRK LIGHT SELECTION SWITCH	01 No.
18	TAIL. LIGHT SELECTION SWITCH	01 No.
19	W-LIGHT CAB-I SELECTION SWITCH	01 No.
20	FLASH LIGHT SELECTION SWITCH	01 No.
21	W-LIGHT CAB-II SELECTION SWITCH	01 No.
22	CAMERA SELECTION SWITCH	01 No.
23	OHE BYPASS SELECTION SWITCH	01 No.
24	WIPER MOTOR SELECTION SWITCH	01 No.
25	PARKING BRAKE APPLIED PUSH BUTTON	01 No.
26	PARKING BRAKE RELEASE PUSH BUTTON	01 No.
27	INDICATOR FOR PARKING BRAKE APPLIED	01 No.
28	INDICATOR FOR PARKING BRAKE RELEASE	01 No.
29	INDICATOR FOR RADIATOR WATER LEVEL NORMAL ENGINE-I	01 No.
30	INDICATOR FOR RADIATOR WATER LEVEL LOW ENGINE-I	01 No.
31	INDICATOR FOR RADIATOR WATER LEVEL NORMAL ENGINE-II	01 No.
32	INDICATOR FOR RADIATOR WATER LEVEL LOW ENGINE-II	01 No.
33	INDICATOR FOR TRANSMISSION-I OIL TEMP. NORMAL	01 No.
34	INDICATOR FOR TRANSMISSION-I OIL TEMP. HIGH	01 No.
35	INDICATOR FOR TRANSMISSION-II OIL TEMP. NORMAL	01 No.
36	INDICATOR FOR TRANSMISSION-II OIL TEMP. HIGH	01 No.
37	INDICATOR FOR HYD. TEMP. NORMAL	01 No.
38	INDICATOR FOR HYD. TEMP. HIGH	01 No.
39	INDICATOR FOR HYD. LEVEL NORMAL	01 No.
40	INDICATOR FOR HYD. LEVEL HIGH	01 No.
41	INDICATOR FOR RRU-I	01 No.

42	INDICATOR FOR RRU-II	01 No.
43	INDICATOR FOR STAB.-I	01 No.
44	INDICATOR FOR STAB.-II	01 No.
45	INDICATOR FOR STAB.-III	01 No.
46	INDICATOR FOR STAB.-IV	01 No.
47	INDICATOR FOR CRANE-I ON	01 No.
48	INDICATOR FOR CRAN-II ON	01 No.
49	INDICATOR FOR 24V ON	01 No.
50	INDICATOR FOR 110V ON	01 No.
51	INDICATOR FOR E STOP-I	01 No.
52	INDICATOR FOR E-STOP-II	01 No.
53	TRANS. OIL TEMP. GAUGE-1	01 No.
54	TRANS. OIL TEMP. GAUGE-2	01 No.
55	TRANS. OIL PRESSURE GAUGE-1	01 No.
56	TRANS. OIL PRESSURE GAUGE-2	01 No.
57	SPEED CUM RECORDER	01 No.
58	PARKING GAUGE	01 No.
59	DUPLEX PRESS. GAUGE (BC1,BC2)	01 No.
60	DUPLEX PRESS. GAUGE (MR-BP)	01 No.
61	FULE LEVEL GAUGE	01 No.
62	AC DISPLAY	01 No.
63	HYD. TEMP. GAUGE	01 No.
64	TFT MONITOR	01 No.
65	OHE DEVICE	01 No.
66	USB POWER PORT 24V DC-I	01 No.
67	USB POWER PORT 24V DC-II	01 No.
68	ENGINE-I DISPLAY	01 No.
69	ENGINE-II DISPLAY	01 No.
70	ENGINE EMG. STOP SWITCH	01 No.
71	THROTTLE	01 No.
72	HORN PUSH BUTTON	01 No.
73	VCD RESET UNIT	01 No.
74	HEAD LIGHT SELECTION SWITCH	01 No.
75	SPEAKER OFF PUSH BUTTON	01 No.
76	HORN PUSH BUTTON	01 No.
77	EMG BRK. SELECTION SWITCH	01 No.
78	ENGINE EMG STOP SWITCH	01 No.
79	D-1 EMG BRAKE VALVE	01 No.
80	P.A SYSTEM	01 No.
81	MR-I	01 No.
82	MR-II	01 No.
83	BP	01 No.
84	EPG PRESSURE SWITCH	01 No.
85	EPG MAGNETIC SWITCH	01 No.

7. OPERATION

7.1 OPERATION OF VEHICLE

Before operating the equipment read this manual thoroughly and operate accordingly instruction given below should be strictly followed for trouble free running of RAIL BOUND MOBILE VEHICLE (RBMV).

A. PREPARATION BEFORE START:

Perform following checks on the vehicle when started for the first time in the day.

1. Check for any leakage of engine lub oil, Transmission oil, ADGB oil, hydraulic oil and
2. Water underneath of vehicle, if noticed attend and rectify / top up if level is low.
3. Check correct oil level in engine & sump by dipstick, top up if it is low.
4. Check correct oil level in transmission oil sump by dipstick, top up it is low.
5. Check correct oil level in ADGB by dipstick, top up it is low.
6. Drain the condensed water from CDC, MR-1, MR-2 & MR-3 daily.
7. Ensure sufficient fuel level in the vehicle fuel tank.
8. Ensure Hyd. Crane and its accessories are fully closed and locked & stabilizers are fully locked.
9. Ensure all safety pins/locks & power line fasteners are ok.
10. Battery cut out switches (24V & 110V) has to be turned to 'ON' position and it's safety MCB's should also be turned ON (Located in made cab near door). Then driver has to go in cabin1 for electrical control power selection for operative cabin (cabin1 or cabin2), this cabin change over switch (**Cabin 1-off- Cabin 2**) is provided in cabin-1 on driver desk.
11. If cabin 1 is selected for operation, then MCB's of this control desk should be made 'ON' .

B. STARTING THE ENGINE:

1. Turn control panel main MCB's to ON position.
2. Insert the ignition key on digital display of engine & turn the key to ON/RUN position. Ensure all the electric indicators, gauges & meters are functioning properly. Ensure transmission is in neutral condition.
3. Keep the parking brake push button in applied position.
4. Turn the ignition key further to crank the engine , Do not crank starter motor more than 5 seconds in one stroke.
5. Attempt if engine does not get start in first attempt wait at least for 60 seconds for reattempt to start the engine.

C. SETTING THE VEHICLE IN MOTION:

1. Run the engine idle for 5 minutes and then gradually accelerate the engine to 2200 rpm by electronics throttle combined lever on control panel and raise the air pressure/MR pressure up to 8 kg/cm².
2. As the pressure of the MR will reach to 8 kg/cm², the Un-loader valve provided in the pneumatic circuit will starts functioning and will maintaining the air pressure 7-8 kg/cm²(cut in-cutout pressure).
3. Press the horn switch to blow horn as required before moving the vehicle as alertness to surroundings.
4. A-9 automatic brake valve lever & D-1 emergency brake valve lever are in fully released position.
5. Ensure BP line pressure in gauge is reach 5 kg/cm².
6. Release the parking brake by pressing parking push button switch indication will glow and air parking gauge shows zero pressure .
7. Check the functioning of service brake (A-9), Stand by brake (SA-9) and emergency brake (D-1) by applying & releasing individually, provided on control panel L.H side (A-9 & SA-9) and R.H side (D-1) of the driver's seat.
8. Applying & releasing of brakes can be noticed on the duplex BC pressure gauge provided on the control panel.
9. Maximum brake pressure of the brake chamber is 1.8 kg/cm² .

10. Traction mode switch - Hydrodynamic auto and manual mode can be selected through mode selection switch provided at driver desk.
11. Before engaging the transmission keep throttle in idle position
12. As hydrodynamic mode have been selected then choose the drive option by **auto/manual** switch. Now in manual drive operation, **direction selector switch** has to be positioned in desired direction (forward or reverse). Now shift the gear range selection switch from neutral to low position. Now slowly raise the engine throttle to move the vehicle.
13. To increase further vehicle speed shift the transmission range selector switch to next (intermediate) range and further to high range position.
14. To decrease the vehicle speed shifts the transmission range selector switch towards low range & decrease the throttle.

D. STOPPING THE VEHICLE:

1. Apply the service brake (A-9) gradually by moving the brake lever in apply zone gradually to lower the BP pressure for brake application. Ensure the brake is functioning, BC Pressure both bogie indication will appear in duplex pressure gauge reading (BC1 & BC2).
2. Stand by independent brake (SA-9) can also be used if vehicle is running alone to stop the vehicle.
3. At extreme worse position D-1 emergency brake can also be applied for stopping the vehicle.
4. Now move transmission range and direction selector switch to neutral position.

E. STOPPING THE ENGINE:

1. Ensure the throttle lever in idle position.
2. Apply the parking brake and ensure parking brake pressure in (PK) gauge is zero.
3. Turn the ignition key to OFF position & take out the key. To stop the engine one emergency push button switch is also provided on driver desk.
4. Turn the main MCB of control panel to OFF position.
5. Turn the cabin selector switch to "OFF" position.
6. Turn the battery cut out switches and MCB's to 'OFF' position (Located in mid cab near side boor).

7.2 DIRECTION REVERSING SAFETY

Shift of transmission range & direction selector switch from any higher range to neutral or neutral to any higher range is acceptable but changing of direction of the vehicle from forward to reverse or reverse to forward should only be possible if vehicle speed is below 2kmph or vehicle is in fully stopped position. This safety is already provided by speedometer signal to traction control circuit.

7.3 VCD

VCD is provided with a provision of vigilance cycle, warning cycles and penalty – brake cycles. The drivers should take care of the operations in the OHE otherwise penalty brake will be applied & the same shall be recorded. The detailed functioning is tabulated below:-

The system LAX-VCD-D is a microprocessor based multi-resettable and fail safe system. The system is designed to work on normally DE-energized principle.

The system is based on a number of time cycles such as Vigilance cycle (To), Warning cycle (T1), waning cycle (T2), Penalty brake cycle (T3), Penalty brake cycle (T4).

Operation cycle	Time period in seconds	Indications	Remarks
Vigilance cycle (T0)	60	None	VCD can be reset
Warning cycle (T1)	17	Yellow flashing light	VCD can be reset
Warning cycle (T2)	17	Yellow flashing light & alarm	VCD can be reset
Penalty brake cycle (T3)	34	Yellow flashing light but alarm stops	VCD cannot reset
Penalty brake cycle (T4)	Until reset	None	VCD can be reset by push button

VIGILANCE CYCLE TIME (T0)

The cycle has a preset period set at 60 seconds. This cycle is automatically restarted when the driver performs some positive action such as gear changing, application of brakes, horn, operate on of vigilance push button etc. In normal conditions, if the driver is periodically performing some positive action, the cycle will continually reset and will never run to completion. If the driver is periodically performing some positive action, the cycle will continually reset and will never run to completion. If the driver fails to perform such an action within the cycle period, the cycle period will be completed. At that instant, the second time cycle (Warning cycle) will be initiated. If the Vigilance push button switch remains in press / release position more than 60 sec, the system enters into the warning cycle T1.

THE SYSTEM IS RESET BY OPERATION OF THE FREQUENTLY OPERATED CONTROL FUNCTION BY THE DRIVER SUCH AS :

1. Operation gear change.
2. Operation of horns.
3. Operation of standby brake (A9)
4. Operation of standby brake (SA9)
5. Operations of emergency brake.
6. Operation of vigilance reset push button switch.

WARNING CYCLE (T1) :

The cycle has a preset period of 17 seconds. During this cycle a Yellow, flashing LED warns the driver to acknowledge the VCD reset push button. If the driver acknowledges during this cycle, the cycle is terminated and vigilance cycle is restarted. If the driver fails to acknowledge, VCD goes to next warning cycle.

WARNING CYCLE (T2) :

The cycle has a preset period of 17 seconds. During this cycle a Yellow, flashing LED and audio alarm warns the driver to acknowledge the VCD push button. If the driver acknowledges during this cycle, the cycle is terminated and vigilance cycle is restarted. If the driver fails to acknowledge, VCD goes to application of penalty brake.

PENALTY BRAKE CYCLE (T3) : (APPLICATION OF PENALTY BRAKE)

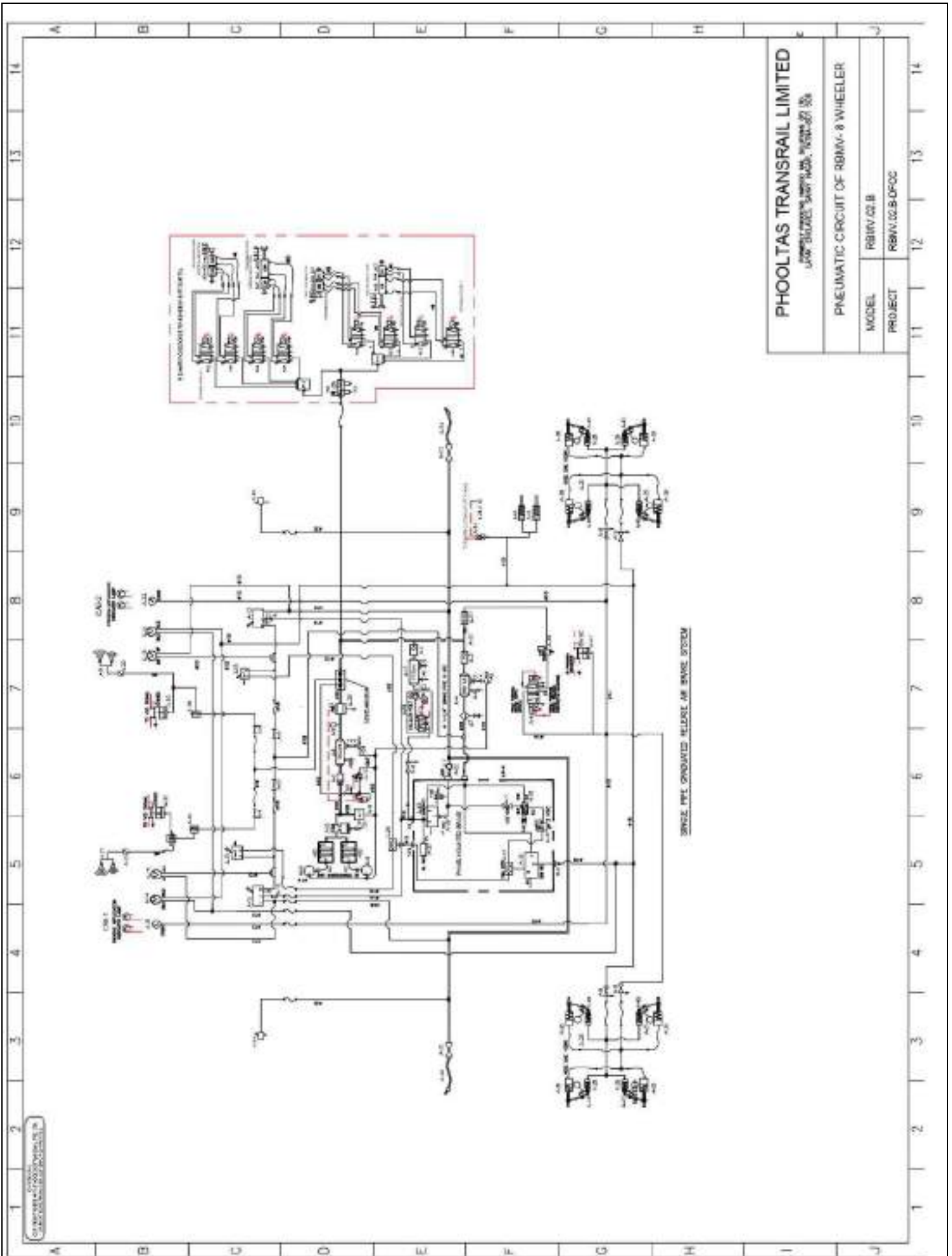
The cycle has a preset period of 34 seconds. A penalty brake indication (RED LED blinking) is also provided during this cycle. During this cycle an output signal is generated to DMR, which will bring the locomotive to idle position. During this cycle, the driver cannot reset the VCD after the completion of this cycle, the system enters into next penalty brake cycle (T4). The penalty brake counter is incremented by one during this cycle. Data will be logged with date and time stamp at the start of T3 time (Application of penalty brake).

PENALTY BRAKE CYCLE (T4) : (RELEASE OF PENALTY BRAKE)

This cycle is a continuous cycle and will be reset only when the following conditions are fulfilled

- (a) Throttle handle has been brought to IDLE
- (b) Vehicle speed is Zero / BCP is $\geq 2.3 \text{ kg / cm}^2$
- (c) RESET button is pressed.

When the above conditions are met, the penalty brake is released and visual warning is cancelled and normal vehicle operation can be re-established. Data will be logged with date and time stamp at the end of T4 time. (Penalty brake release).



8) PNEUMATIC CIRCUIT WITH COMPONENT (3020800000)

S. No.	DESCRIPTION	Qty.
A1	UNLOADER VALVE	01 No.
A2	1" CHECK VALVE	05 Nos.
A3	SAFETY VALVE TYPE J-1 SET AT 8.5 Kg/cm ² .	01 No.
A4	M.R-I AND MR-II RESERVOIR (150 Ltrs EACH)	02 No.
A5	Auto drain valve with timing reservoir type D-1	03 No.
A6	½" Drain cock	03 Nos.
A7	J- Air filter with drain cock	01 No.
A8	PRESSURE SWITCH RT-116 SET TO CLOSE AT 8Kg/cm ² OPEN AT 7Kg/cm ²	01 No.
A9	3/8" ISO cock with vent	08 Nos.
A10	3-WAY MAGNET VALVE 24V D.C.NORMALLY CLOSED	01 No.
A11	1" ISOLATING COCK WITH OUT VENT,P/MTD.	01 Nos.
A12	A-9 Auto brake valve	02 Nos.
A13	½" ISO cock	05 Nos.
A14	4" Duplex press gauge (BP)	02 Nos.
A15	4" Duplex press gauge (MR)	02 Nos.
A16	C3W DIST. VALVE WITH SUPPORT/CONTROL RESERVOIR AND FILTER, P/MOUNTED	01 No.
A17	M.R-III, RESERVOIR 100 Ltrs	01 No.
A18	N1-REDUCING VALVE SET AT 5 kg/cm ² .	03 Nos.
A19	N1-REDUCING VALVE SET AT 2 kg/cm ² ,P/MTD.	02 No.
A20	1/4" BSP 2 WAY HEAVY DUTY DIRECT ACTING SOLENOID VALVE FOR HORN 24V DC 2S025-08	02 Nos.
A21	PNEUMATIC HORN(DOUBLE TONE)	02 Nos.
A22	2 Way Dirt collector	01 No.
A23	ANGLE COCK (BP)(AS PER RDSO DRG. NO. WD-88123/S-02)	02 Nos.
A24	HOSE WITH DUMMY COUPLING (BP)	02 Nos.
A25	SPRING BRAKE ACTUATOR (PARKING BRAKE)	08 Nos.
A26	GRADUATED HAND CONTROL VALVE (FOR PARKING BRAKE)	02 Nos.
A27	24 A DOUBLE CHECK. VALVE, P/MOUNTED	05 Nos.
A28	AIR DRYER-OF RDSO APPROVED	01 No.
A29	V.C.D control Assembly 24 V DC	01 No.
A30	PRESSURE SWITCH (VCD SIGNAL), 3Kg/cm ² to 4Kg/cm ²	02 Nos.
A31	RESURVOIR 10 LTR	02 Nos.
A32	4" PARKING BRAKE INDICATOR GAUGE	02 Nos.
A33	SA-9 BRAKE VALVE SET AT 2 kg/cm ²	02 Nos.
A34	EAB/D-1 EMERGENCY BRAKE VALVE	02 Nos.
A35	8" BRAKE CYLINDER,JSL TYPE,WITH TRUNION	08 Nos.
A36	PRESSURE PROTECTION VALVE	02 Nos.
A37	RESERVOIR-2 LTRS.(B.P.EQUALISE)	01 No.
A38	C-2W RELAY VALVE (B.C.), P/MOUNTED	01 No.
A39	1" ISOLATING COCK WITHOUT VENT,P/MTD.	01 No.
A40	3/8" ISO COCK WITHOUT VENT	01 No.
A41	SINGLE ACTING SPRING RETURN CYL. (TRANS. POWER CUT OFF CYL. (1 kg/cm ²)	01 Nos.

A42	1" CDC WITH 7L RESERV WITH DRAIN COCK	01 No.
A43	C-2W RELAY VALVE (B.P.), P/MOUNTED	01 No.
A44	PRESSURE SWITCH/W RT-200 POWER CUT OFF (0.5kg/cm ² /1 kg/cm ²)	01 No.
A45	MECHANICAL QUICK RELEASE MECHANISUM	04 Nos.

PNEUMATIC CIRCUIT DESCRIPTION –RAIL BOUND MODILE VEHICLE 8-WHEELER
PART NO.:-3020800000 MODEL NO. :- RBMV.02.B

8.1) GENERAL:

RBMV-8 wheeler pneumatic system consists of single pipe graduated air release type braking with fail-safe system & vigilance control device (VCD). It also consists of pneumatic controls from operator desk like horn, transmission shift control and traction power cut-off etc.

8.2) OPERATING SYSTEM OF BRAKING:

MR charging & pressure control:

In ref to pneumatic control diagram MR–1 & MR–2 Item no. A-4 & A-17 get charge by engine driven compressors item no. A-49 through a suitable after cooler and condensed dirt collector item no. A-50 & A-42. A suitable capacity air dryer item no. A-28 is also provided in circuit for air purification. To protect the air pressure in reservoirs, non-return valves item no. A-2 are provided. An unloader valve item no. A-1 is fitted in circuit after the compressor delivery line to maintain air pressure in the circuit. Manual drain cocks item no. A-6 and auto drain valve item no. A-5 are provided with reservoirs to vent out the moisture. To give loading and unloading signal to unloader valve a suitable electro pneumatic valve item no. A10 and pressure switch item no. A8 are provided to act as electro pneumatic governor (EPG). Is provided in the circuit. Pressure setting of electro pneumatic governor pressure switch item no. A8 is set to close at 8 KSC and open at 7 KSC. To protect the system if unloader circuit fails a J1 safety valve item no. A3 is set at 8.5 KSC.

8.3) BRAKE SYSTEM:

RBMV –8 wheeler is provided with panel brake system (single pipe graduated release type air brake) with partial, full and emergency application feature. Brake panel has consist of C3W distributor valve with control reservoir item no. A16, Two C2W relay valve, one with a control reservoir item no. A43 & A37 for producing BP air pressure in the system. and other one C2W relay valve item no. 38 is provided to produce BC pressure in the system by getting regulated signal from C3W distributer valve and N1 reducing valve item no. A16 & A19. A double check valve item no. A27 is provided with outlet port on signal port of C2W relay valve BC. Double check valve one inlet port is connected from SA9 valve output from independent brake and other port is connected from N1 reducing valve at panel for application of RBMV as required. Panel has provided with isolating cock item no. A11 & A39 for isolating of distributor valve and C2W relay BP in case of as it required.

RBMV control desk has standard locomotive application brake component such as A-9 brake valve item no. A-12, SA-9 brake valve item no. A-33 and D-1 emergency brake valve item no. A-34. Each control desk have been provided with pressure indication gauge like MR, BP, BCI- BCII, parking gauge (Park), brake pipe (BP) item no. A15, A14, A53, A54 and A32. Parking push button and apply release indicator are also provided on control desk. Brake pipe pressure (BP) is set at 5 KSC through A-9 brake valve in each cab. BC pressure is set at 2 KSC through N-1 reducing valve item no. A-19 and SA-9 valve item no. A-33.

8.4) IN-NORMAL RUNNING (A9 BRAKE RELEASE CONDITIONS):

In normal running condition of operating desk isolating cock item no. A-9 will be kept on and non-operating desk should be kept off. A9 valve isolating cock item no. A13 of operating desk should be kept on and non-operating should be kept off. SA9, D-1 and parking brake lever are kept in brake release position.

At this condition, A9 brake valve will give signal to C2W relay valve BP item no. A43 on panel brake to deliver 5kg/cm² BP pressure to C3W distributor valve as well as through BP line provided across the vehicle, end stock shutoff cocks should be remain closed. At this stage C3W distributor valve BC signal will get vent out and BC pressure from brake chamber will also vent out through C2W relay (BC) item no. A38 at panel brake assembly so there will be no brake pressure indication on BC pressure gauge.

8.5 A-9 BRAKE APPLICATION:

Whenever A9 brake valve lever is moved towards brake application like partial brake, full brake or emergency position, BP pressure is drop by regulation of A-9 brake valve from C2W relay (BC) and C3W distributor valve. At this condition C3W distributor valve item no. A-16 gives BC output signal to N-1 reducing valve item no. A-19 to operate the C2W relay valve item no. A-38 from where air pressure goes to BC line for brake chamber item no. A35 to apply the brake. When A-9 lever is moved to release position BP pressure rises up to 5 KSC & C3W distributor valve vent signal out from N-1 reducing valve and thus, C2W relay valve item no. A-38 also exhausts the supplied air from BC line to release the brake application.

8.6) SA-9 BRAKE APPLICATION:

SA-9 item no. A33 brake valve is an independent brake valve, which is set at 2 KSC. In case of A9 brake valve circuit failure or RBMV working alone this brake valve may be used as stand by brake valve. Whenever this brake lever is moved in apply position, a pneumatic signal goes to C2W relay (BC) item no. A-38 through double check valve item no. A-27 to apply the brake. When lever is moved in release position, signal is vent out from SA-9 brake valve and thus C2W relay valve exhaust the supplied air from BC line to release the brake.

8.7) D-1 EMERGENCY BRAKE VALVE:

Emergency brake valve item no. A-34 is mounted at operator desk at right side which applied to vent the BP rapidly to quick application of C2W relay valve of BC line item no. A-38, through C3W distributor valve BC signal at emergency and panic condition.

8.8) PARKING BRAKE:

For parking brake application and release, each operator desk has been provided with electrical push button switch to operate an electro magnet valve item no. A-46 to provide air pressure to spring applied brake chamber to release parking brake. 5 KSC pressure is required to release fully parking brake for which one N1 reducing valve item no.-A-18 set at 5 KSC is provided in the circuit. Manual quick release mechanism is provided with each parking brake chamber to release parking brake in case of towing of RBMV by other power and non-availability of Air pressure.

8.9) VIGILANCE CONTROL SYSTEM:

Vigilance control system consists of a magnet valve, Pressure switch and a VCD unit item no. A-29. VCD magnet valve is connected before port no. 2 of C2W relay valve-(BP) item no. A-43. VCD time setting is done as per standard norm. Electrical signal to suppress the VCD is achieved from various pressure switches item no. A-48 and A54 such as horn, BC line and driver hand press VCD button. Whenever there is delay to operate the signal to suppress the VCD; VCD unit will supply the electrical signal to operate the audio / buzzer for few second. If still, there is no response from operator then, VCD unit will supply the electrical signal to electromagnetic valve to exhaust the BP line, thus brake gets applied.

8.10) PNEUMATIC ACCESSORIES:

Pneumatic accessories RBMV - 8 Wheeler has been provided with hydrodynamic transmission shift control electro pneumatic components like, electro pneumatic valve air service unit and pneumatic cylinder are provided in circuit. Additional air tapping point is also provided to operate any auxiliary air unit or tool if required.

Whenever BC line pressure rises up to 0.5 to 1 KSC, pressure switch item no. A-44 will supply the electrical signal to power cut-off and bring throttle of engine at idle and hydrodynamic transmission power cut-off.

Additional shut off cocks item no. A-9 and A-13 are provided at various locations in the circuit to isolate the required section whenever required.

8.11) BRAKING IN HAULING / TRAIN FORMATION:

- a. If RBMV -8 Wheeler is hauling a trailing load / coach. As RBMV is provided with BP cock and hose coupling to maintain 5KSC BP pressure to attached trailing BFR/ coach to release the brakes for traction. Brake will be operated from RBMV A-9 brake valve from operator control desk along trailing BFR as required for normal operation.
- b. If RBMV -8 Wheeler is hauled by a loco/power car: As RBMV is provided with single through pipe connected to a C3W distributor valve reservoirs. BP cocks and hose coupling are provided to get supply 5KSC BP pressure from attached power car to release the brakes for traction. Brake will be operated from power car A-9 auto brake valve from operator control desk along RBMV as required for normal operation.

9. HYDRAULIC CIRCUIT WITH COMPONENTS (3020900000)

S. No.	DESCRIPTION	QTY.
1.	HYD. TANK 400 LTRS.	01 NO.
2.	EMERGENCY GEAR PUMP	01 NO.
3.	HYDEX GEAR COUPLING	01 NO.
4.	EMERGENCY PUMP DRIVE ELECTRICAL MOTOR 3HP	01 NO.
5.	IN LINE CHECK VALVE 5 PSI ½"	01 NOS.
6.	SUB PLATE 06 SIZE SERIES 1"PORT	01 NO.
7.	3 POSITION DIRECTION CONTROL VALVE	01 NOS.
8.	EXT. ELC. POWER DRIVEN AC COMPRESSOR (DEPORT USE)	01 NO.
9.	2 POSITION VALVE (PUMP POWER SELECTION)	04 NOS.
10.	SUB PLATE 03 SERIES	04 NOS.
11.	IN LINE CHECK VALVE (BYPASS) 3 BAR, 1" PORT	02 NOS.
12.	OIL COOLER 1-1/2",110/24VDC FAN DIA 400, MODEL-AH-1680, 26.5 KW,FLOW 300 LPM	01 NO.
13.	IN LINE CHECK VALVE 5 PSI 3/4"	04 NOS.
14.	DIRT INDICATOR GAUGE 1/8"	01 NOS.
15.	PRESSURE GAUGE 0 TO 400 KG/CM.SQ.	03 NOS.
16.	GAUGE CONNECTOR	03 NOS.
17.	QUICK CONNECT COUPLING 1/2"	02 NO.
18.	3/4" SUB PLATE FOR 2 POSITION DIRECTION VALVE	02 NOS.
19.	BALL VALVE (LOW PRESSURE) 3/4"	01 NOS.
20.	SINGLE GEAR PUMP FOR RADIATOR FAN DRIVE MOTOR	02 NOS.
21.	FAN DRIVE HYD. MOTOR	02 NOS.
22.	RADIO REMOTE CONTROL FOR 4 SECTION MANUAL VALVE CRANE MECANICAL RADIO REMOTE CONTROL SYSTEM	02 NO.
23.	BALL VALVE (LOW PRESSURE) 1-1/2"	03 NOS.
24.	PRESSURE RELIVE VALVE	01 NO.
25.	BEND AXIS FIXED DISP. PISTON PUMP FOR CRANE AND PLATFORM REXROTH 32 CC-A17FO032/10NLWKOE81-0	02 NOS.
26.	SUCTION STRAINER 1-1/2" PORT 150 MICRONS	05 NOS.
27.	HIGH TEMP. SEAFY SWITCH 85°C	01 NO.
28.	LEVEL GAUGE WITH TEMP. INDICATOR	01 NO.
29.	FILLER BREATHER	01 NO.
30.	RETURN FILTER ASSEMBLY 1-1/2" PORT 10MICRON FILTER FLOW 200LPM	01 NOS.
31.	LOW OIL SAFETY SWITCH	01 NO.
32.	PILOT OPERATOR CHECK VALVE	04 NOS.
33.	STABILIZER CYLINDER	04 NO.
34.	3 POSITION STABILISER CONTROL VALVE	02 NO.
35.	HIGH PRESSURE SHUT OFF COCK 1/2"	04 NO.
36.	2 POSITION MANUAL DIRECTION CONTROL VALVE 03 SERIES	02 NO.
37.	OIL COOLER 1-1/2",110/24VDC FAN DIA 350	01 NO.

HYDRAULIC CIRCUIT OF RAIL BOUND MOBILE VEHICLE (MODEL No. 8B0302)
PART NO.:– 3020900000, MODEL- RBMV.02.B

GENERAL :

8 Wheeler RBMV consist of many hyd. operated units such as radiator cooling fan drive, crane operation and air conditioning drive. Each unit are placed suitably connected in hyd. circuit with various control valve to perform the operation.

Circuit has been provided with various hyd. components such as strainer, oil filter, oil cooler and system control valves like check valve, flow control valve, over center valve, low oil level & high temperature safety switch for trouble free operation of unit.

Hydraulic. circuit working description are given as below. :

9.1) HYDRAULIC POWER PACK:

- a. Engine transmission mounted double pump (Item no.-25) for radiator fan and A.C drive.
- b. Engine transmission mounted piston pump (Item no.-20) for crane operation.
- c. External electrical power operated motor and hyd. pump (Item no.-8 & 10) to drive one air conditioner when vehicle halt in depot.
- d. Battery operated emergency windup motor & pump (Item no.-4 & 2).

A single large size of hyd. tank (Item no.-1) is provided which consist of suction strainers (Item no.-26), return filter (Item no.-30), low oil safety switch (Item no.-31) and high temperature safety switch (Item no.-27). Tank outlet ports are connected with shut off cock (Item no.-23 & 19) to suction line of various pump. Hyd. oil coolers (Item no.-12) and its choking. protection safety bypass check valve (Item no.-11) are provided to maintain safe working temperature i.e below 85°C.

9.2) CRANE OPERATION:

To operate cranes, piston pumps (Item no.-33) are mounted on both main traction engines transmission P.T.O. window. Each pump has sufficient oil flow and pressure to operate one crane at a time.

There is a 3 position direction control valve (Item no.-7) which used as work mode selection valve to used one engine running power to operate one crane at a time. Crane will be operated by radio remote control with better work visibility as desire. Crane unit control circuit are provided with all desire safety features.

Crane stability is in ensure by 4 nos. stabilizer cylinder (Item no.-36). A priority 3 way flow control valve (Item no.-32) provide hyd. flow to stabilizer through control valve (Item no.-33). Shut off cock (Item no.-35) and pilot check valve (Item no.-37) are provided in stabilizer circuit as a safety.

9.3) TWIN RADIATOR FAN & AIR CONDITIONER DRIVE:-

A tandem pump item no 25 are provided on both main traction power transmission driven P.T.O. When main engine run, its one outlet of pump operate one engine radiator fan motor item no. 32 for cooling of coolant & charge air cooler, 2nd outlet drive to air conditioner item no. 18 through flow divider item no. 38 .Pressure control valve item no. 24 are used in all pump pressure circuit to protect the system.

9.4) EXTERNAL ELECTRICAL POWER TO ONE AIR CONDITIONER:-

One electrical motor & hydraulic pump item no 8,10 are provided in the hyd. circuit.

This pump will be used to drive only one air conditioner unit by external electrical power supply to when vehicle is halt in depot and main engine are not in working. Suitable power socket and operating switches are provided in the vehicle for external power supply in depot.

9.5) BATTERY OPERATED EMERGENCY HYD. POWER:-

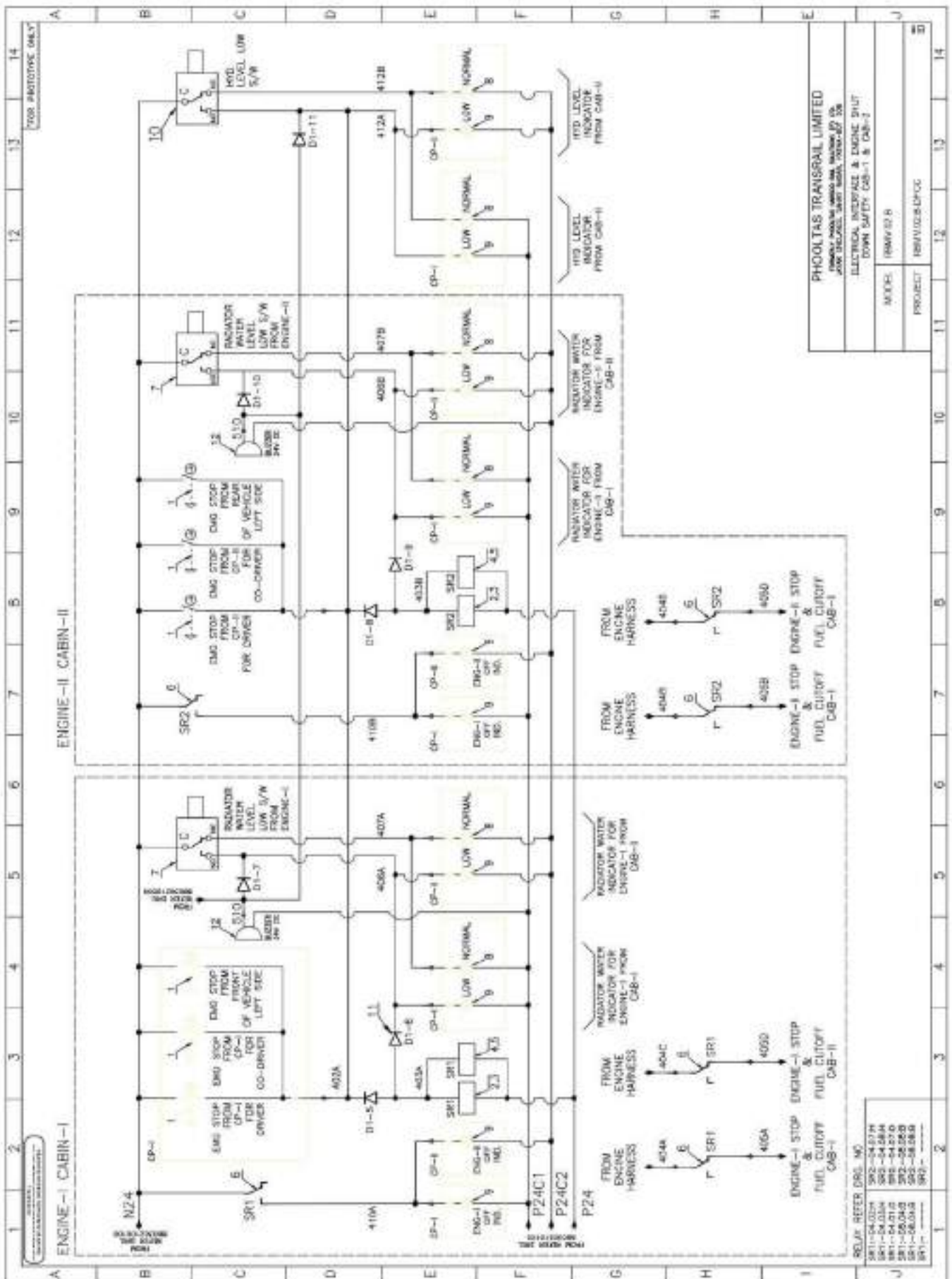
To wind up the crane, platform and telescopic seat, There is a battery operated electrical motor and a small hyd. pump item no. 2 & 4 are provided in the circuit .In emergency situation this power will be use to wind up the extended unit if main & auxiliary power will be fails.

10.1) 24V POWER SUPPLY FOR ENGINE-I & ENGINE-II (3021001000)

S. NO.	DESCRIPTION	QTY.
1	12V 150 AH BATTERY	8 nos
2	ALTERNATOR 24V, 100A, MAKE- LUCAS TVS	2 nos
3	SELF STARTER RELAY	2 nos
4	DIODE IN5408 (D1 TO D4)	4 nos
5A-5B	BATTERY CUT OFF SWITCH 100 AMP	3 nos
6	40A DP MCB, DC	2 nos
7	6A SP MCB, DC	4 nos
8	SOCKET 2 POLE 20 AMP. FOR BATTERY CHARGING	4 nos
9	3P SEL. SWITCH WITH KEY OPERATING	1 no.
10	NO ELEMENT FOR S/W	4 nos
11	RELAY NO/NC CONTACT (R3)	2 nos
12	25A DP MCB, DC	2 nos
13	GREEN INDICATOR 24VOLT DC	2 nos
14	UNLOADER PRESSURE SWITCH	1 no.
15	UNLOADER VALVE	1 no.

S. NO.	DESCRIPTION	QTY.
1	RELAY 14 PIN 6A 24V DC 4 C/O	15 nos
2	RELAY BASE 14 PIN	15 nos

S. NO.	DESCRIPTION	QTY.
1	RELAY 14 PIN 6A 24V DC 4 C/O	15 nos
2	RELAY BASE 14 PIN	15 nos

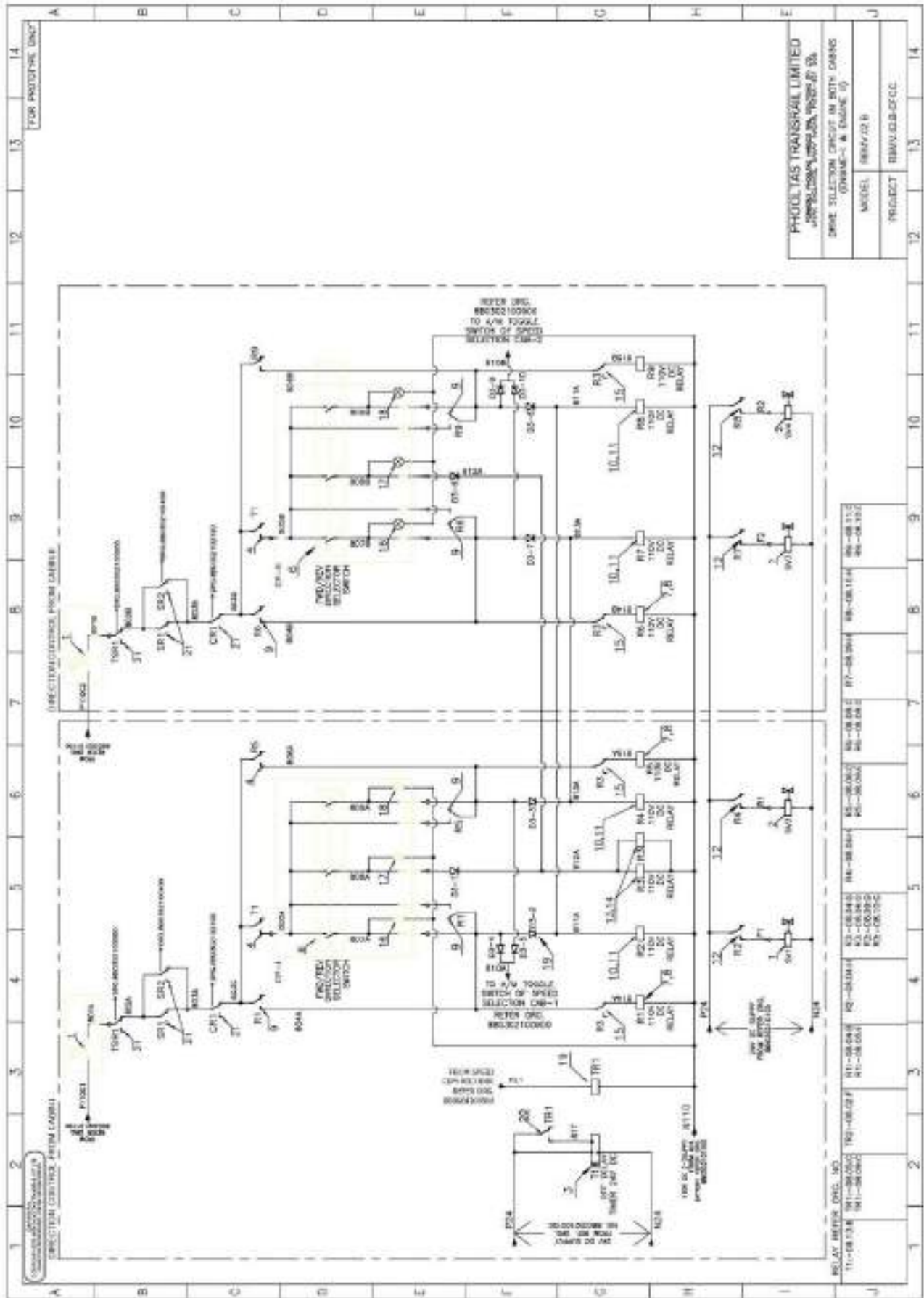


10.4) ELECTRICAL INTERFACE & ENGINE SHUT DOWN SAFETY CAB-1 & CAB-2 (3021004000)

S. NO.	DESCRIPTION	QTY.
1	RED EMERGENCY SWITCH MUSHROOM TYPE WITH NO POINT	12 nos
2	4 C/O RELAY, 24V DC (SR1 & SR2)	2 nos
3	4 C/O RELAY BASE (SR1 & SR2)	2 nos
4	2 C/O RELAY, 24V DC (SR1 & SR2)	2 nos
5	2 C/O RELAY BASE (SR1 & SR2)	2 nos
6	RELAY NO/NC CONTACT (SR1 & SR2)	6 nos
7	RADIATOR WATER LEVEL LOW SAFETY SWITCH, MAKE-SHRIDHAN	2 nos
8	GREEN INDICATOR 24VOLT DC	6 nos
9	RED INDICATOR 24VOLT DC	10 nos
10	HYD. LEVEL LOW SWITCH (HYDRAULICCKT)	1 no.
11	DIODE IN5408 (D5 TO D8)	4 nos
12	BUZZER 24VOLT V DC	2 nos

10.5) ELECTRICAL CIRCUIT ENGINE & TRANSMISSION SAFETY CONTROL (3021005000)

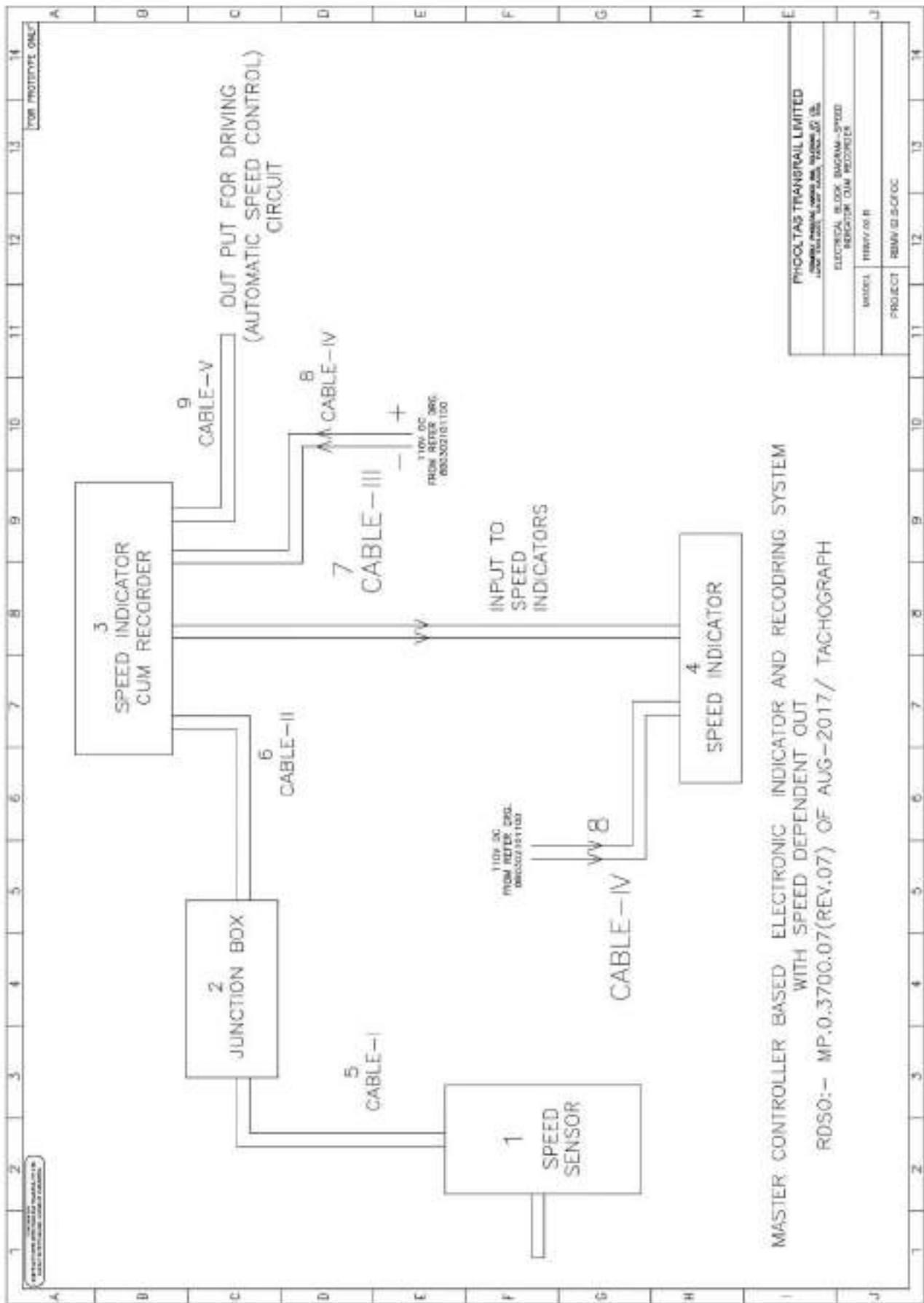
S. NO.	DESCRIPTION	QTY.
1	4 C/O RELAY, 24V DC (TSR1)	1 no.
2	4 C/O RELAY BASE (TSR1)	1 no.
3	2 C/O RELAY, 24V DC (TSR1)	1 no.
4	2 C/O RELAY BASE (TSR1)	1 no.
5	RELAY NO/NC CONTACT (TSR1)	4 nos
6	TRANSMISSION OIL TEMP. HIGH	2 nos
7	HYDRAULIC TEMP. HIGH SWITCH	1 no.
8	INDICATOR 24VOLT DC GREEN	6 nos
9	INDICATOR 24VOLT DC RED	6 nos
10	DIODE IN5408 (D9 TO D11)	3 nos
11	B.C. PRESSURE SWITCH	1 no.
12	4 C/O RELAY, 24V DC (BCR1)	1 no.
13	4 C/O RELAY BASE (BCR1)	1 no.
14	RELAY NO/NC CONTACT (TSR1)	4 nos
15	B.P. PRESSURE SWITCH	1 no.

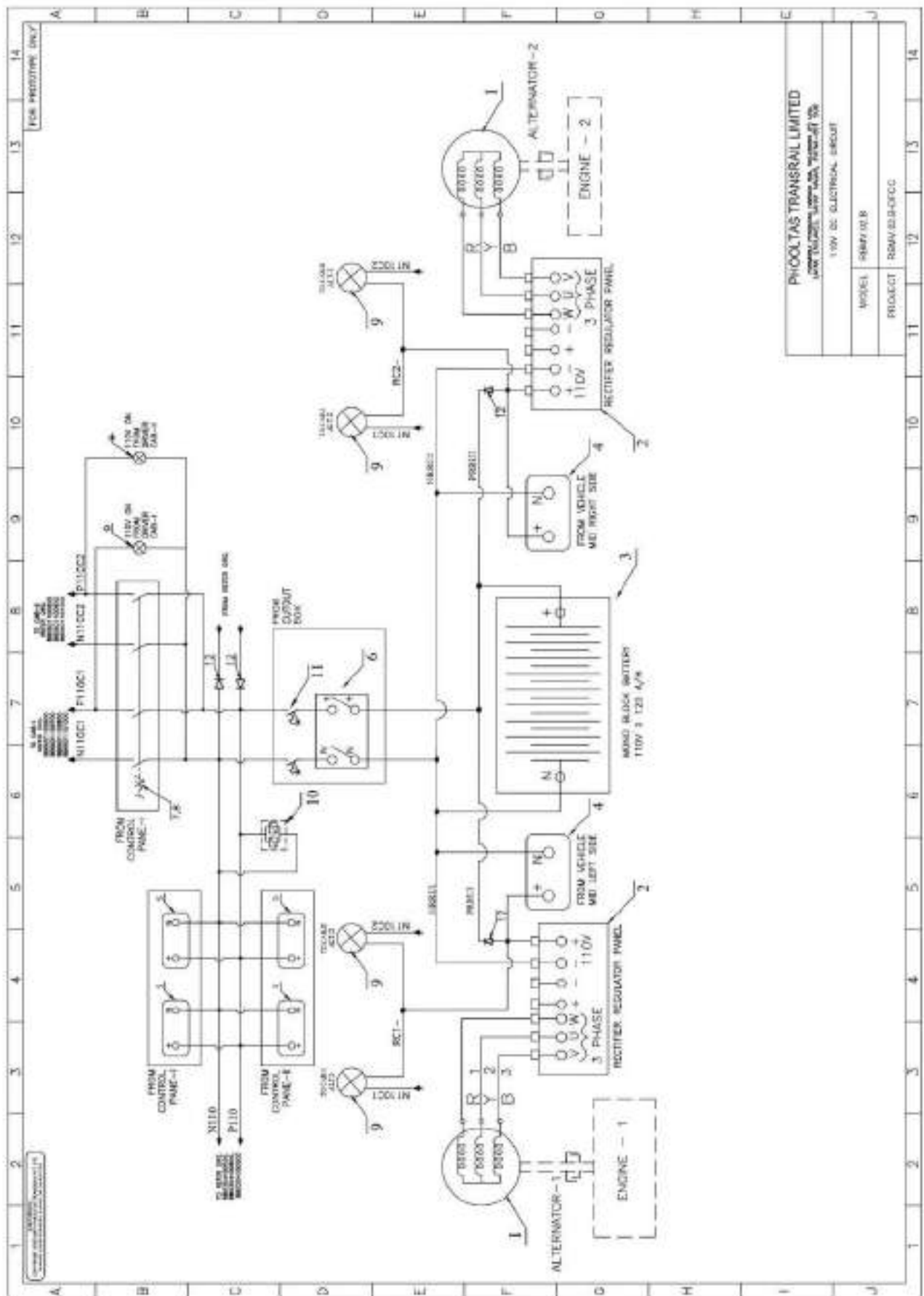


10.6) DRIVE SELECTION CIRCUIT IN BOTH CABIN (ENGINE-I & ENGINE-II) (3021006000)

S. NO.	DESCRIPTION	QTY.
1	SINGLE SOLENOID VALVE 110V DCFOR FWD DIRECTION CONTROL	2 nos
2	SINGLE SOLENOID VALVE 110V DC FOR REV DIRECTION CONTROL	2 nos
3	OFF DELAY TIMER 1 C/O, (T1) COIL 24V DC	1 no.
4	TIMER (T1) NO/NC CONTACT	2 nos
5	DIODE IN5408 (D12 TO D21)	10 nos
6	16A ROTARY SWITCH SINGLE POLE, 4 WAY,61050 FOR DIRECTION FWD/REV	2 nos
7	8 PIN, 2 CHANGEOVER RELAY (R1,R5,R6,R9) 110V DC	4 nos
8	8 PIN 2 CHANGEOVER RELAY BASE (R1,R5,R6,R9)	4 nos
9	RELAY NO/NC CONTACT (R1,R5,R6,R9) FOR 2 CHANGEOVER REALY	8 nos
10	5 PIN, 1 CHANGEOVER RELAY (R2,R4,R7,R8) 110V DC	4 nos
11	5 PIN 2 CHANGEOVER RELAY BASE (R2,R4,R7,R8)	4 nos
12	RELAY NO/NC CONTACT (R2,R4,R7,R8) FOR 1 CHANGEOVER REALY	4 nos.
13	14PIN, 4 CHANGEOVER RELAY (R3) 110V DC	2 nos
14	14PIN, 4 CHANGEOVER RELAY BASE (R3)	2 nos
15	RELAY NO/NC CONTACT (R3) FOR 4 CHANGEOVER REALY	4 nos
16	GREEN INDICATOR 110V DC FOR FORWARD DIRECTION	2 nos
17	YELLOW INDICATOR 110V DC FOR NEUTRAL DIRECTION	2 nos
18	BLUE INDICATOR 110V DC FOR REVERSE DIRECTION	2 nos
19a	5 PIN, 1 CHANGEOVER RELAY (TR2) 110V DC	1 no.
19b	5 PIN, 1 CHANGEOVER RELAY BASE (TR2)	1 no.
20	RELAY NO/NC CONTACT (TR2) FOR 2 CHANGEOVER REALY	1 no.
21	RELAY NO/NC CONTACT (TSR1,SR1,SR2,CR1)	8 nos

S. NO.	DESCRIPTION	QTY.
1	SINGLE SOLENOID VALVE 24V DC FOR SPEED SELECTION (BOTH TRANS.)	4 nos
2	AUTO/MANUAL 3P SELECTOR SWITCH	2 nos
3	16A ROTARY SWITCH, 2P3W, GEAR SEL., 61080	2 nos
4	5 PIN,1C/O RELAY COIL(R12,R13,R14,R15)110V	4 nos
5	5 PIN,1C/O RELAY BASE(R12,R13,R14,R15)	4 nos
6	RELAY NO/NC CONTACT (R12,R13,R14,R15) FOR 1 CHANGE OVER REALY	4 nos
7	GREEN INDICATOR 110V DC FOR SPEED-1	2 nos
8	YELLO INDICATOR 110V DC FOR SPEE-2	4 nos
9	BLUE INDICATOR 110V DC FOR SPEED-3	4 nos
10	3 C/O RELAY COIL (R10) 110V DC	1 no.
11	3 C/O RELAY BASE(R10)	1 no.
12	RELAY NO/NC CONTACT (R10)	3 nos
13	DIODE IN5408 (D22 TO D38)	17 nos
14	ON/OFF 2P SELECTOR SWITCH NO ELEMENT FOR S/W	8 nos
15	2 C/O RELAY COIL (R8) 110V DC	1 no.
16	2 C/O RELAY BASE(R8)	1 no.
17	RELAY NO/NC CONTACT (R8)	2 nos
18	RED INDICATOR 24VOLT DC	2 nos
19	SOLENOID VALVE 24V DC	1 no.





PHOOLAS TRANSRAIL LIMITED		
110V DC ELECTRICAL CIRCUIT		
MODEL	RDM/23.0/000	
PROJECT	RDM/23.0/000	

10.8) 110V DC ELECTRICAL CIRCUIT (3021008000)

S. NO.	DESCRIPTION	QTY.
1	AUXILLIARY ALTERNATOR 4.5 KW,110V	2 nos.
2	RECTIFIER REGULATOR PANEL	2 nos.
3	BATTERY110V X 120 AH	1 no.
4	SOCKET 2 POLE 20 AMP. FOR BATTERY CHARGING	2 nos.
5	SOCKET 2 POLE 20 AMP. FOR HAND SIGNALS	4 nos.
6	BATTERY CUT OFF SWITCH100AMP	1 no.
7	3 POS. SEL. S/W WITH KEY OPERATE	1 no.
8	NO ELEMENT FOR S/W	2 nos.
9	NO ELEMENT FOR S/W	6 nos.
10	AIR DRYER PURGE VALVE	1 no.
11	40A DP MCB, DC	1 no.
12	25A DIODE, MODEL NO-25HM160 M8 WL, MAKE-RUTTONSHA	4 nos.

S. NO.	DESCRIPTION	QTY.
1	ON/OFF 2P SELECTOR SWITCH	1 no.
2	FLASHER LIGHT CONTROL UNIT	1 no.
3	ONE WAY SWITCH, COLOR-WHITE	40 nos
4	ROTARY SWITCH 1P 5W-HEAD LIGHT	1 no.
5	HEAD LIGHT 110V DC	1 no.
6	FLASHER LIGHT 110V DC	1 no.
7	MARKER LIGHT LEFT 110V DC	1 no.
8	MARKER LIGHT RIGHT 110V DC	1 no.
9	TAIL LIGHT LEFT 110V DC	1 no.
10	TAIL LIGHT RIGHT 110V DC	1 no.
11	MCB 6A SP FOR HEAD LIGHT	1 no.
12	MCB 6A SP FOR FLASHER LIGHT	1 no.
13	MCB 6A SP FOR MAR.&TAIL LIGHT	1 no.
14	MCB 16A SP FOR WIPER MOTOR	1 no.
15	MCB 6AMP FOR LIGHT & FAN	3 nos
16	DRIVER CAB LIGHT 110V, 18W	2 nos
17	DRIVER CAB LIGHT 110V, 9W	21 nos
18	FAN 110V DC	13 nos
19	WIPER 24V DC	1 no.
20	GLASS FUSE	46 nos
21	ON/OFF/ON 3P SWITCH	2 nos
22	MCB 6A SP FOR EXHAUST FAN	1 no.
23	8" FAN EXHAUST 24V DC	1 no.
24	MCB 6A SP FOR WORK LIGHT	1 no.
25	WORK LIGHT RIGHT 24V DC	2 nos

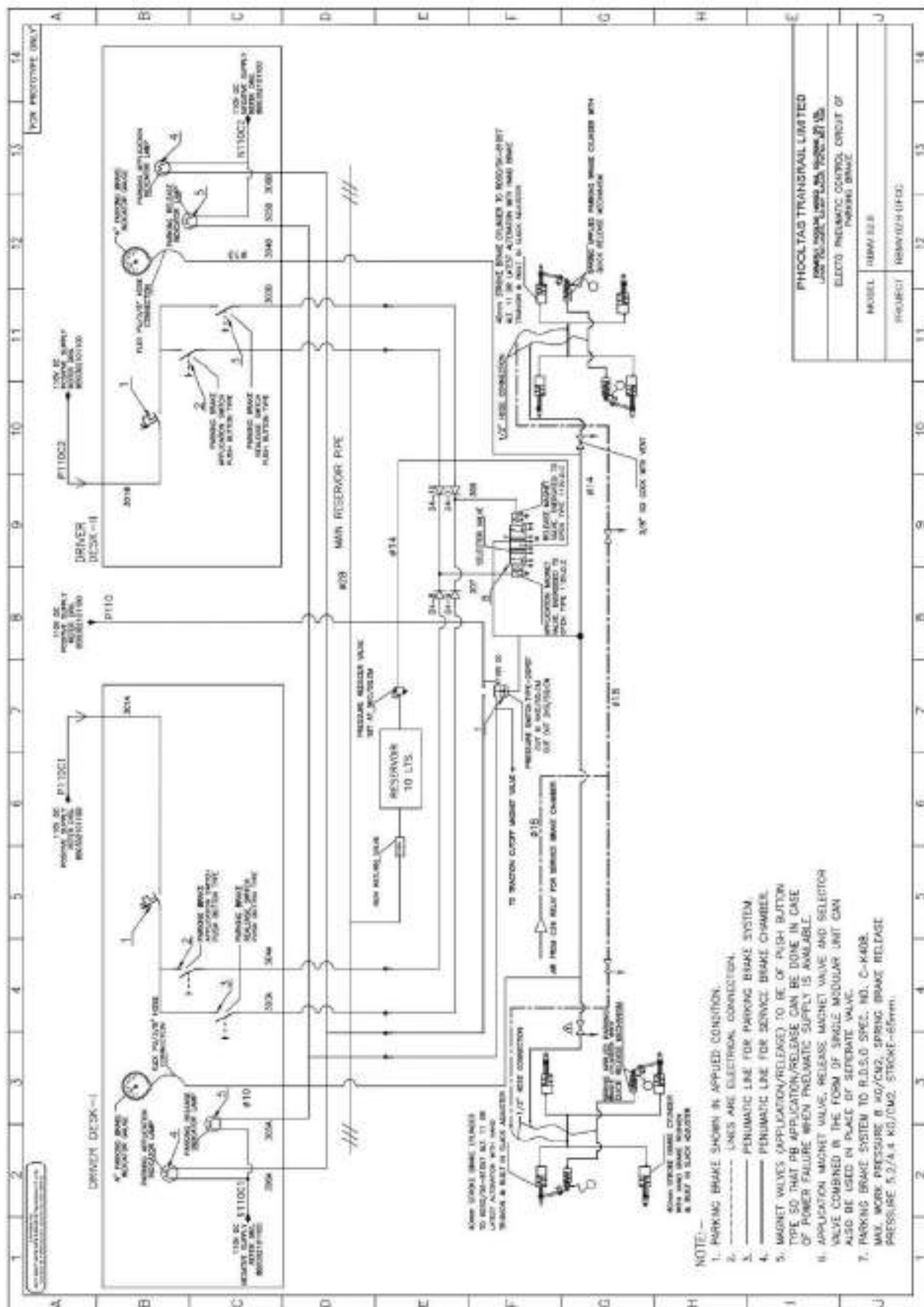
S. NO.	DESCRIPTION	QTY.
1	ON/OFF 2P SELECTOR SWITCH	1 no.
2	FLASHER LIGHT CONTROL UNIT	1 no.
3	ONE WAY SWITCH, COLOR-WHITE	17 no.
4	ROTARY SWITCH 1P 5W FOR HEAD LIGHT	1 no.
5	HEAD LIGHT 110V DC	1 no.
6	FLASHER LIGHT 110V DC	1 no.
7	MARKER LIGHT LEFT 110V DC	1 no.
8	MARKER LIGHT RIGHT 110V DC	1 no.
9	TAIL LIGHT LEFT 110V DC	1 no.
10	TAIL LIGHT RIGHT 110V DC	1 no.
11	MCB 6A SP FOR HEAD LIGHT	1 no.
12	MCB 6A SP FOR FLASHER LIGHT	1 no.
13	MCB 6A SP FOR MAR.&TAIL LIGHT	1 no.
14	MCB 16A SP FOR WIPER MOTOR	1 no.
15	MCB 6AMP FOR LIGHT & FAN	1 no.
16	DRIVER CAB LIGHT 110V, 18W	2 nos
17	FAN 110V DC	2 nos
18	WIPER 24V DC	1 no.
19	GLASS FUSE	15 nos
20	ON/OFF/ON 3P SWITCH	2 nos
21	MCB 16A SP FOR WATER MOTOR	1 no.
22	0.23KW 24V DC MOTOR	1 no.
23	MCB 16A SP FOR HYDRAULICOIL COOLER FAN	1 no.
24	TEMPERATURE SWITCH VARUAVKE TYPE (25°C - 90°C)	2 nos
25	HYDRAULICOIL COOLER FAN	2 nos
26	DUAL USB CHARGER	4 nos
27	TWIN SOCKET	14 nos

10.11) ELECTRO PNEUMATIC CKT OF VCD INTERFACE CONTROL (3021011000)

S. NO.	DESCRIPTION	QTY.
1	VCD CONTROL UNIT	1 no.
2	VCD RESET UNIT	2 nos
3	HORN SOLENOID VALVE	2 nos
4	HORN PRESSURE SWITCH	2 nos
5	B.C PRESSURE SWITCH	2 nos
6	HORN PUSH BUTTON SWITCH YELLOW NO	8 nos
7	ELECTRO PNEUMATIC SOLENOID VALVE	1 no.

S. NO.	DESCRIPTION	QTY.
1	40A AC, 24V DC, PART NO- ST-10SC	4 no.
2	6A SP MCB, DC	4 no.

S. NO.	DESCRIPTION	QTY.
1	40A AC, 24V DC, PART NO- ST-10SC	1 no.
2	THREE PHASE MOTOR & ALTERNATOR	1 no.
3	32A TP MCB, AC	1 no.
4	6A SP MCB, DC	1 no.
5	5 PINS PANEL MOUNTING SOCKET 30A 415V	2 no.

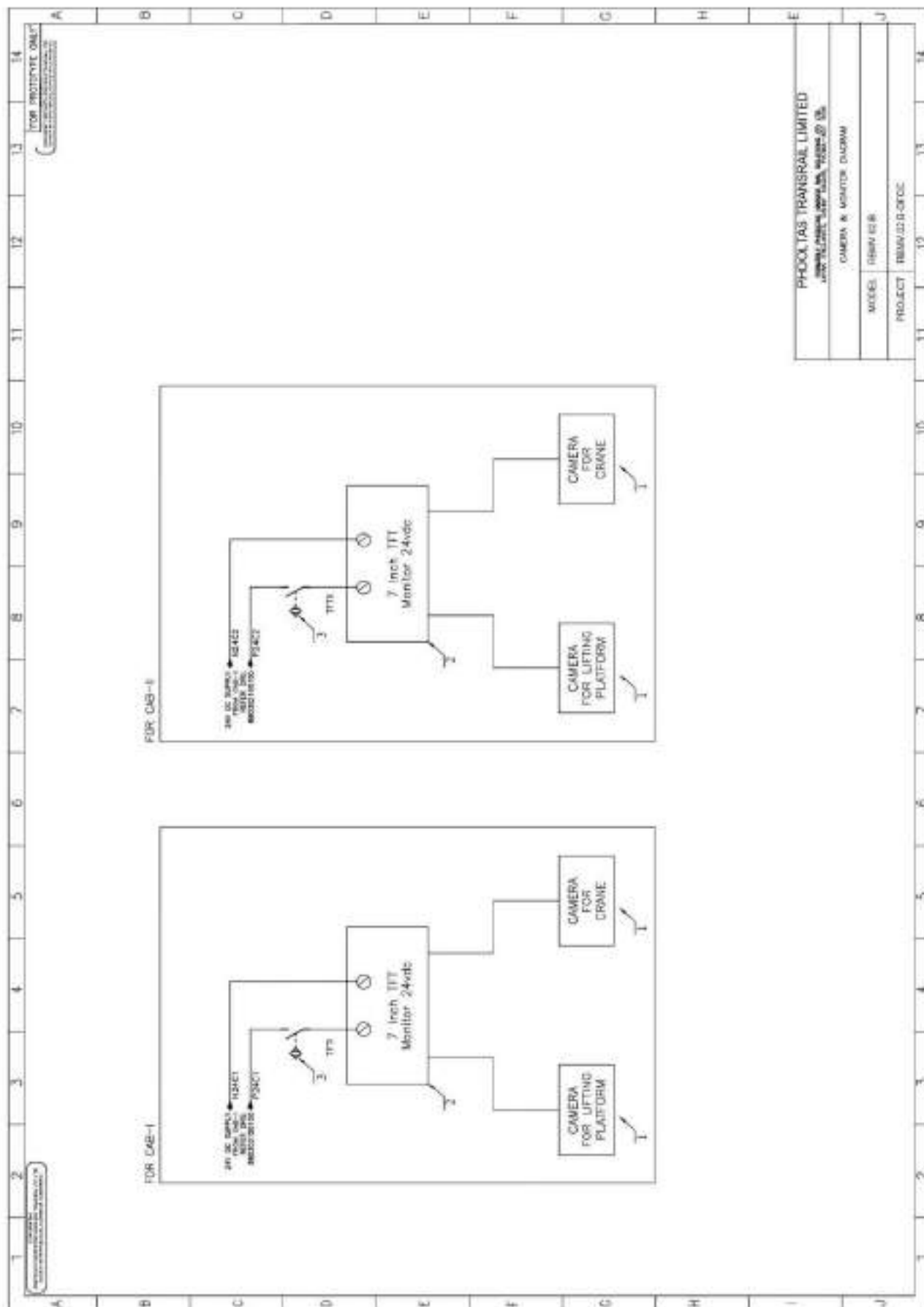


10.14) ELECTRO PNEUMATIC CONTROL CIRCUIT OF PARKING BRAKE (3021014000)

S. NO.	DESCRIPTION	QTY.
1	6A SP MCB	2 nos
2	PARKING BRAKE APPLICATION RED PUSH BUTTON SWITCH	2 nos
3	PARKING BRAKE RELEASE GREEN PUSH BUTTON SWITCH	2 nos
4	PARKING APPLICATION RED INDICATOR 110V DC	2 nos
5	PARKING RELEASE GREEN INDICATOR 110V DC	2 nos
6	DIODE IN5408 (D39 TO D42)	4 nos
7	PARKING PRESSURE SWITCH	1 no.
8	SELECTOR VALVE 110V DC	1 no.

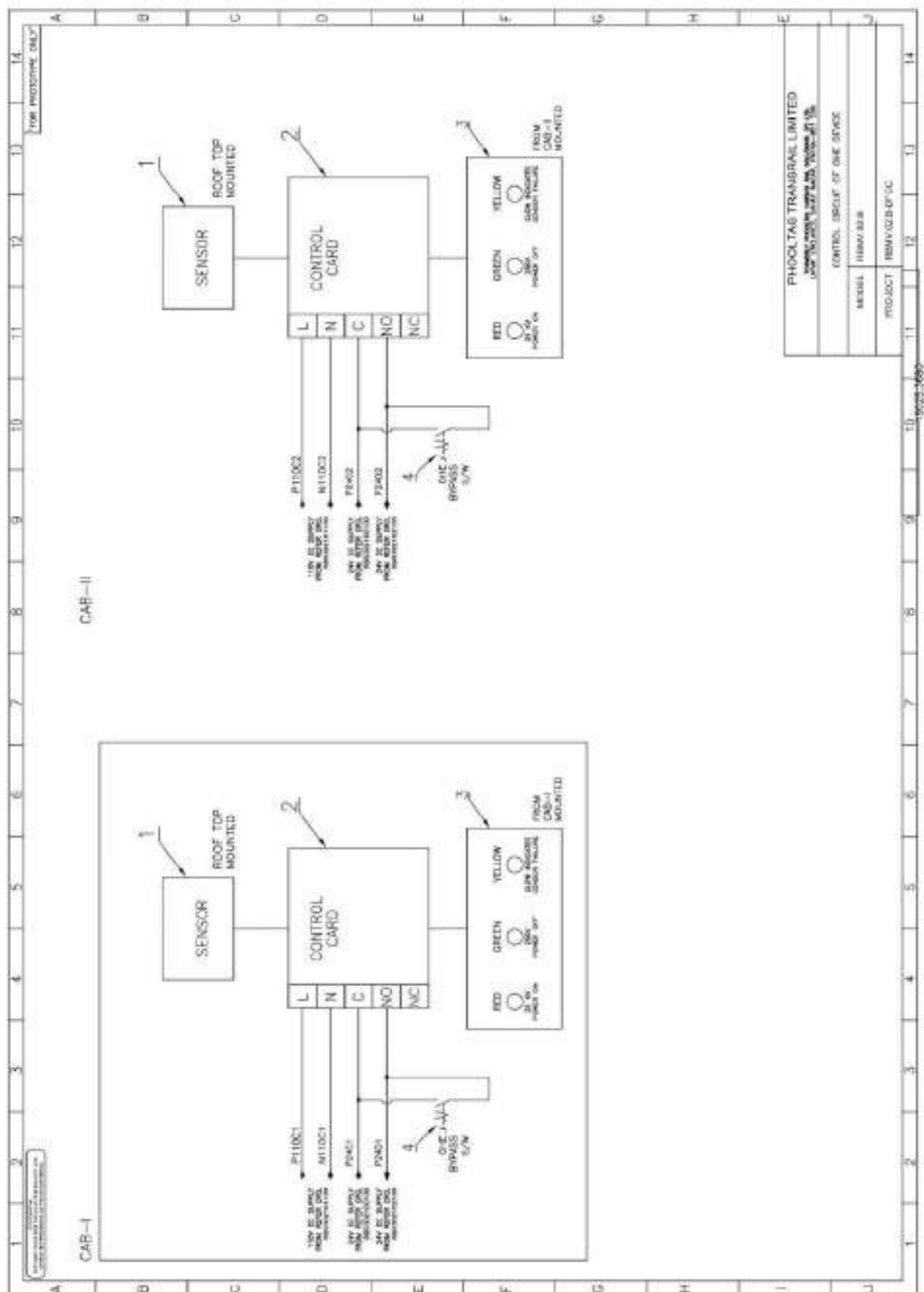
S. NO.	DESCRIPTION	QTY.
1	AMPLIFIER	1 no.
2	MICROPHONE	2 nos
3	WALL SPEAKER, 300TM	4 nos
4	YELLOW PUSH BUTTON SWITCH WITH NO ELEMENT	4 nos
5	MCB 16A SP	1 no.
6	WALL MOUNTED, OUTDOOR SPEAKER	2 nos

S. NO.	DESCRIPTION	QTY.
1	Water Dispensary, 230v Ac 500w	1 no.
2	Microwave 230v Ac, 1150w	1 no.
3	Kettle, 230v Ac, 1500w	1 no.
4	Refrigerator, 230v Ac, 65w	1 no.
5	Socket, Color-White	4 nos
6	10a 1 Way Switch, Color-White	4 nos
7	Honda Genset Eu30is	1 no.
8	AC TO DC Converter, CAPACITY- 2.0KVA, I/P-230VAC, O/P-110V DC & (B) 24 VDC	1 no.
9	Socket 2 Pole 20 Amp.	4 nos
10	Changeover Switch 2 Pole 2 Way,25amp, Make-Gic, 61026	1 no.



10.17) CAMERA & MONITOR DIAGRAM (3021017000)

S. NO.	DESCRIPTION	QTY.
1	Camera	4 nos
2	7 Inch (with Recording) TFT monitor	2 nos
3a	ON/OFF 2P SELECTOR SWITCH	2 nos
3b	NO ELEMENT FOR S/W	2 nos

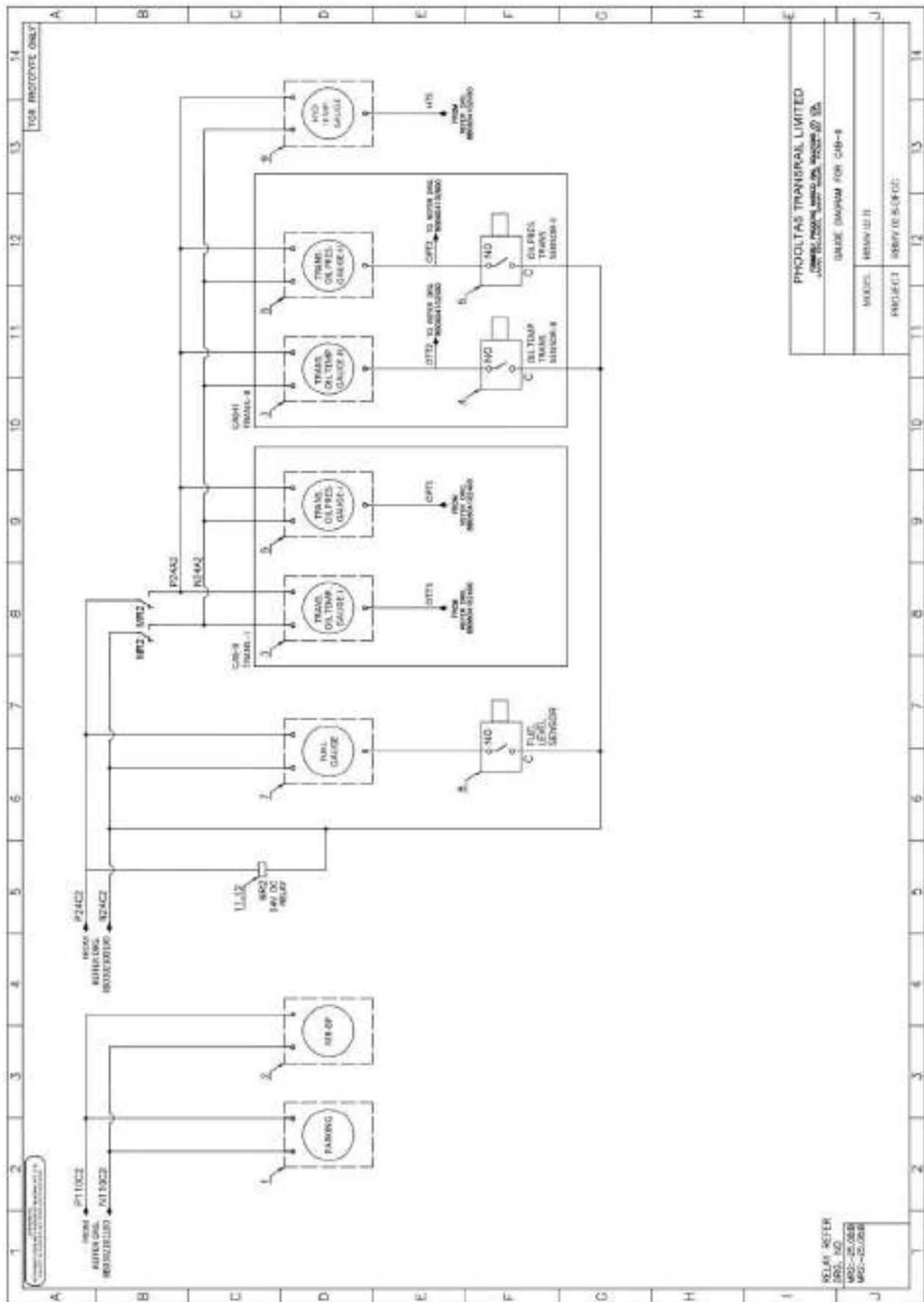


S. NO.	DESCRIPTION	QTY.
1	OHE SENSOR	2 set.
	OHE CONTROL CARD	
	OHE DISPLAY	
2	OFF/ON SWITCH FOR OHE BYPASS	4 nos



S. NO.	DESCRIPTION	QTY.
1	CRANE	2 nos
2	CRANE-1 ON IND. GREEN	2 nos
3	CRANE-2 ON IND. GREEN	2 nos
4	LIMIT SWITCH	4 nos
5	RED IND. STAB-I ON	2 nos
6	RED IND. STAB-II ON	2 nos
7	RED IND. STAB-III ON	2 nos
8	RED IND. STAB-IV ON	2 nos
9	2 C/O RELAY, 24V DC	1 no.
10	2 C/O RELAY BASE	1 no.
11	4 C/O RELAY, 24V DC	1 no.
12	4 C/O RELAY BASE	1 no.
13	DIODE IN5408 (47 TO 50)	4 nos
14	BY PASS SWITCH GREEN PUSH BUTTON WITH NO TYPE	4 nos
15	6A SP MCB, DC	1 no.

S. NO.	DESCRIPTION	QTY.
1	CRANE	2 nos
2	CRANE-1 ON IND. GREEN	2 nos
3	CRANE-2 ON IND. GREEN	2 nos
4	LIMIT SWITCH	4 nos
5	RED IND. STAB-I ON	2 nos
6	RED IND. STAB-II ON	2 nos
7	RED IND. STAB-III ON	2 nos
8	RED IND. STAB-IV ON	2 nos
9	2 C/O RELAY, 24V DC	1 no.
10	2 C/O RELAY BASE	1 no.
11	4 C/O RELAY, 24V DC	1 no.
12	4 C/O RELAY BASE	1 no.
13	DIODE IN5408 (47 TO 50)	4 nos
14	BY PASS SWITCH GREEN PUSH BUTTON WITH NO TYPE	4 nos
15	6A SP MCB, DC	1 no.



10.21) GAUGE DIAGRAM FOR CAB-II (3021021000)

S. NO.	DESCRIPTION	QTY.
1	4" PARKING BRAKE GAUGE	1 no.
2	4" DUPLEX PRESS. GAUGE (MR-BP)	1 no.
3	TRANSMISSION TEMPERATURE GAUGE	2 nos
4	TRANSMISSION TEMPERATURE SENSOR	1 no.
5	TRANSMISSION OIL PRESSURE GAUGE	2 nos
6	PRESSURE SENSOR/SENDER, ES2PM-200	1 no.
7	FUEL LEVEL GUAGE ELECTRICAL, VEETHREE 24V DC	1 no.
8	FUEL LEVEL SENSOR, 24V DC	1 no.
9	HYD. TEMPERATURE GAUGE	1 no.
10	HYDRAULICTEMPERATURE SENSOR	1 no.
11	2 C/O RELAY, 24V DC (MR1)	1 no.
12	2 C/O RELAY BASE (MR1)	1 no.
13	RELAY NO/NC CONTACT (MR1)	2 nos

24 VOLT POWER SUPPLY FOR ENGINE- I AND ENGINE- II (3021001000)

DESCRIPTION

Rail Bound Mobile Vehicle has been provided with twin engine power pack for main traction. Each engine has 1 set of 24V, 300AH battery (Item no.1). Battery boxes are mounted both side of under frame. The 24V DC supply goes to self-starter through battery cut off switch (Item no.5A), Battery Cutout box is locked at center cabin near Hydraulic Tank.

When 24V DC battery cutoff switch is made ON,

Supply from both cut off switch (item no-5A) goes to input terminal of 3P 2W selector switch key operated (item no.9,10) through MCB (item no-6).

One addition

al Cut-Off switch (Item no.5B) is provided ahead of both battery cut-off switches as a combination switch to provide a power if any one battery bank run down & not able to crank that engine, this is emergency combination power cutoff switch for starting the engine.

In case :-

1. Any one battery bank is run down or discharge and not able to fully crank the engine for starting, then Cut-Off switch (Item no.5B) will be made ON to crank the engine.

Engine battery Charging system 24V DC:-

- As per ckt each engine has mounted one 24V DC Alternator (Item no.2) which provides 24V DC supply for charging the Battery. Further alternator supply power to engine controls, compressor un-loader switch and other 24V DC electrical Load.
- In case of longer idle stay of vehicle without engine running, Ckt has been provided with two no's External charging socket for each battery bank (Item no-8) for externally suitable battery charger 24V DC to avoid deep discharging of batteries.

110 VOLT AUX. ALTERNATOR FOR AUX. LOAD

Auxiliary Power supply:- For fans, lights, hydrodynamic transmission valves, air dryer valve, speedo meter, OHE sensor & etc.

Rail Bound Mobile Vehicle has two traction engine, each engine front end drives an Aux. Alternator (item no-1) through a small cardan shaft.

Auxiliary alternator 4.5KW (Item no.1) under slung mounted are connected to Engine-I and Engine-II which gives output (120V +/- 5% DC, min/max-700 to 2500 RPM) through both Rectifier regulator panel (Item no.2) for required control.

The function of Rectifier regulator unit (Item no.2) converts 3 phase AC Voltage to 120V DC for 110V DC 120Ah battery bank charging. 110V DC Battery composite (6V X 19 No's) boxes are mounted both side of under frame. Ckt has been provided with two indication lamp (Item no-9) at both driver control panel which connected Rectifier regulator unit as per drawing which show healthy condition of Aux. Alternator.

From RRU unit 110V DC supply goes to cut off switch (Item no.6), Battery Cutout box is locked at center cabin near Hydraulic Tank.

When 110V battery cutout switch is made ON,

Supply from cut-off switch (item no-6) goes to input terminal of 3P 2W selector switch key operated (item no.7,8) locked on Driver control desk of cab-I, this switch is provided for 110V Power supply selection & interlock for aux. Controls in both cabins. From cutoff switch power directly goes to Air dryer (item no. 10) & speedo meter through MCB (item no-11).

ENGINE CONTROL 24V DC SYSTEM

ENGINE-I ECU-I (3021002000) & ENGINE-II ECU-II (3021003000) CONTROL DIAGRAM

Engine starting/stopping & safety:

After switching ON the 24V DC battery cutoff switches & power supply MCB's (item no-6) power goes to cab-I for operative/control cabin selection switch (3P 2W selector switch, Item no-9,10).

This switch can be operated to choose engine power control from cabin-I or cabin-II, this way this switch provided for 24V cabin control power selection & interlocking.

CAB-I

If cabin-I is selected then power goes to MCB's power distribution panel on control desk at cabin-I, after MCB switching ON (item no-12) the engine power MCB power goes to both ECU BOX-I & II for individual engine controls (engine display, throttle & ECU) &, each ECU is connected with eight relay box (ER1 - ER8, item no-1,2) **ENGINE-I ECU-I BOX** & (ER16 - ER-23, item no-1,2) **ENGINE-II ECU-II BOX**. Now this way engine ECU, Engine Control Display & Throttle are connected for operation at cabin-I Each engine has individual ECU, two control display, two throttle control (both throttle mechanically connected) to operate the engines from both cabins.

Once 24V DC power is selected for cabin-I. Each engine has control & display unit with starting Key (3Position, OFF-ON-CRANK), both has to be engine started individual, For controlling the engine RPM electronics throttle lever is operated.

Stopping Engine:

1. Stopping by starting key - Each engine has OFF position in starting key, once Key is turned to OFF position, power supply in ECU/EDC control cut off, thus engine gets stop.
2. By emergency stop switch :- Emergency switch NO type (item no-1) is provided on control desk & at various location to stop the fuel supply to stop the engine.

Engine Safety : Each engine has provided with following safety feature.

1. Radiator water Level Low :- Engine gets shutdown & indication "ON" on control desk.
2. Low lube oil pressure:- Engine gets shutdown & indication "ON" on engine display unit.
3. Engine Speed too high:- Engine gets shutdown & indication "ON" on engine display unit.
4. Engine Water temp. Too high:- Engine gets idle & indication "ON" on engine display unit
5. Engine boost air pressure low:- Engine gets idle & indication "ON" on engine display unit.
6. Fuel in water:- Engine will not start, gets stop & indication "ON" on engine display unit.

CAB-II

After switching ON the 24V DC battery cutoff switches & power supply MCB's (item no-6) power goes to cab-I for operative/control cabin selection switch (3P 2W selector switch, item no-9,10).

This switch can be operated to choose engine power control from cabin-I or cabin-II, this way this switch provided for 24V cabin control power selection & interlocking.

If cabin-II is selected then power goes to MCB's power distribution panel on control desk at cabin-II, after MCB switching ON (item no-12) the engine power MCB power goes to both ECU BOX-I & II for individual engine controls (engine display, throttle & ECU) &, each ECU is connected with eight relay box (ER9 - ER15,item no-1,2) **ENGINE-I ECU-I BOX** & (ER24 - ER-30item no-1,2) **ENGINE-II ECU-II BOX**. Now this way engine ECU, Engine Control Display & Throttle are connected for operation at cab-II **Engine starting/Stopping & Engine safety feature & operation are similar to cabin-I .**

ELECTRICAL POWER SUPPLY FOR DRIVE CONTROL (3021008000 & 3021009000)

Traction drive power Selector master Switch (item no-7,8) is provided In Cabin-I for selection of Cabin-I or Cabin-II .

If cabin-I selected, then supply goes to 110V Drive power MCB (item no.1) at cabin-I driver desk. This MCB further supply power to drive mode selection switch (item no-6). Now power is available on **drive mode selector switch unit**, this selector switch will provide the mode of operation,

Supply goes to **direction selector switch**, (Item no-6,3 Position, Fwd-Nut-Rev) through Timer relay NO contact (Item no-4), direction could be selected as desired & indication will glow in control panel.

DRIVE SELECTION CIRCUIT IN BOTH CABINS ENGINE-I & ENGINE-II (3021008000)

DESCRIPTION

Circuit details of Transmission :

1) Transmission-I directional control:-Transmission-I directional control represents the electrical circuit of control panel which controls the drive of vehicle either from cab-I or cab-II. The circuit consists of following items:-

- Rotary switch single pole 3 way with off (Item no.6)
- Indicators green, yellow, red (Item no.16, 17, 18)
- Diode strip
- Terminal Box
- Single solenoid valve for direction control (Item no.1 & 2)

2) Transmission-II directional control:- Transmission-II directional control represents the electrical circuit of control panel which controls the drive of vehicle either from cab-I or cab-II. The circuit consists of following items:-

- Rotary switch single pole 3 way with off (Item no.6)
- Indicators green, yellow, red (Item no.16, 17, 18)
- Diode strip
- Terminal Box
- Single solenoid valve for direction control (Item no.1 & 2)

3) Direction reversing speed protection feature:- An Off Delay Timer (Item no-3) is provided in circuit. Operator will be able select or reverse the direction if speed of the vehicle is nearly stop (Range: - 0-2KMPH) as safety of transmission.

Off-delay timer (Item-3), gets supply on timer coil from speed cum recorder (RL1).

Transmission-I & II directional control in cab-I:-

- Forward position (F) of the rotary switch (Item no.6) for Transmission – I & II directional control in cab-I gives supply 807A to forward indicator (Item no.16) & relay coil (item no-10,11, R2 & R8) & (item no-7,8, R1) through diode, and relay will be hold (R1, R2 & R8) & and relay contact will be change after operating and relay common terminal (item no-12, R2 & R8) is connected with P24, which comes diode (item no.4) and relay NO point (item no-12, R2, R8) is connected terminal Box-I, & terminal Box-II (F1 or R2) and further the output supply F1 goes to forward directional single solenoid valve SV1 (Item no.1) & which engages the transmission clutch as well as the output supply R2 goes to reverse directional single solenoid valve SV4 (Item no.2) & which engages the transmission clutch & vehicle moves in forward direction.
- Neutral position (N) of the rotary switch (Item no.6) for Transmission-I & II operate neutral in cab-I gives supply 808A to neutral indicator (item no-17) & relay coil (item no-13,14, R3) through diode and relay common terminal (item no-15, R3) is connected with relay no point (item no-9, R1, R5, R6, R9), after operate relay R3 relay (item no-13,14), it will be cut all supply & vehicle will be neutral.

DRIVE SELECTION CIRCUIT IN BOTH CABINS ENGINE-I & ENGINE-II (3021008000)

DESCRIPTION

Reverse position (R) of the rotary switch (Item no.6) for Transmission – I & II directional control in cab-I gives supply 809A to reverse indicator (Item no.18) & relay coil (item no-10,11, R4 & R7) & (item no-7,8, R5) through diode, and relay will be hold (R4, R5 & R7) & and relay contact will be change after operating and relay common terminal (item no-12, R4 & R7) is connected with P24, which comes diode (item no.4 & relay NO point item no-12, R4, R7) is connected terminal Box-I, & terminal Box-II (R1 or F2) and further the output supply R1 goes to reverse directional single solenoid valve SV2 (Item no.2) & which engages the transmission clutch as well as the output supply F2 goes to forward directional single solenoid valve SV3 (Item no.2) & which engages the transmission clutch & vehicle moves in reverse direction.

Transmission-I & II directional control in cab-II :

- Forward position (F) of the rotary switch (Item no.6) for Transmission – I & II directional control in cab-II gives supply 807B to forward indicator (Item no.16) & relay coil (item no-10,11, R7 & R4) & (item no-7,8, R6) through diode, and relay will be hold (R6, R7 & R4) & and relay contact will be change after operating and relay common terminal (item no-12, R7 & R4) is connected with P24, which comes diode (item no.4 & relay NO point (item no-12, R4, R7) is connected terminal Box-I, & terminal Box-II (R1 or F2) and further the output supply F2 goes to forward directional single solenoid valve SV3 (Item no.1) & which engages the transmission clutch as well as the output supply R1 goes to reverse directional single solenoid valve SV2 (Item no.2) & which engages the transmission clutch & vehicle moves in forward direction.
- Neutral position (N) of the rotary switch (Item no.6) for Transmission-I & II operate neutral in cab-II gives supply 808B to neutral indicator (item no-17) & relay coil (item no-13,14, R3) through diode and relay common terminal (item no-15, R3) is connected with relay no point (item no-8, R1, R5, R6, R9), after operate relay R3 relay (item no-15), it will be cut all supply & vehicle will be neutral.
- Reverse position (R) of the rotary switch (Item no.6) for Transmission – I & II directional control in cab-II gives supply 809B to reverse indicator (Item no.18) & relay coil (item no-10,11, R8 & R2) & (item no-7,8, R9) through diode, and relay will be hold (R8, R9 & R2) & and relay contact will be change after operating and relay common terminal (item no-12, R8 & R2) is connected with P24, which comes diode (item no.4 & relay NO point (item no-12, R8, R2) is connected terminal Box-I, & terminal Box-II (R2 or F1) and further the output supply R2 goes to reverse directional single solenoid valve SV4 (Item no.2) & which engages the transmission clutch as well as the output supply F1 goes to forward directional single solenoid valve SV1 (Item no.1) & which engages the transmission clutch & vehicle moves in reverse direction.

DRIVE SELECTION CIRCUIT IN BOTH CABINS ENGINE-I & ENGINE-II (3021009000)

DESCRIPTION

Now power is available on speed control selection switch. Item no-2 (3 Position, Auto-Off-Manual),

If Auto Mode drive is selected: This feature is based on wheel mounted techno meter signal output which give 110V signal to electro-pneumatic valve operated control of transmission through relay no contact (item no-6, R12, R13, R14, R15). Once auto mode is selected, Low Gear will be get engage and vehicle move as per engine throttle position maximum and vehicle speed up to 25KMPH. Further intermediate /medium gear position will get engage automatically and vehicle speed up to 55KMPH. Further high gear position will get engage automatically and vehicle speed up to 120KMPH. During normal operation vehicle speed will get automatically control as per techno meter signal supply and power cutoff at various speed automatically. **Normally Auto mode drive selection is made for longer distance of drive.**

If Manual Mode drives is selected:

As direction has been selected by direction selector switch (item no-6) In manual mode power is available on speed selection switch item no-3, (4 Position OFF-LOW-MED.-HIGH).

After selection Manual:

Driving circuit for manual control cabin -I:

110V DC Positive Output supply 901C from auto/manual selector switch (Item no.2) is connected to rotary switch, 2 pole 3way (Item no.3). The driving circuit is controlled through following positions of rotary switch:

1. Select Position-I of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-I gives supply 902A & 902B to speed-I indicator (Item no.7) & relay coil R12 (item no-4,5) & relay R14 (item no-4,5) through diode & it's common terminal R12 & R14 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4) & relay NO terminal R12 & R14 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate first speed.
2. Select Position-II of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-I gives supply 903A & 903B to speed-II indicator (Item no. 8) & relay coil R13 (item no- 4, 5) & relay R14 (item no-4, 5) through diode & it's common terminal R13 & R15 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4) & relay NO terminal R13 & R15 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate second speed.
3. Select Position-III of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-I gives supply 904A & 904B to speed-III indicator (Item no.9) & relay coil R12 & R13 (item no-4, 5) & relay R14 & R15 (item no-4, 5) through diode & it's common terminal R12, R13, R14 & R15 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4) & relay NO terminal R12, R13, R14, & R15 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate third speed.

Driving circuit for manual control cabin -II:

110V DC Positive Output supply 901D from auto/manual selector switch (Item no.2) is connected to rotary switch, 2 pole 3way (Item no.3). The driving circuit is controlled through following positions of rotary switch:

1. Select Position-I of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-II gives supply 902B & 902A to speed-I indicator (Item no.7) & relay coil R14 (item no-4,5) & relay R12 (item no-4,5) through diode & it's common terminal R12 & R14 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4 & relay NO terminal R12 & R14 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate first speed.
2. Select Position-II of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-II gives supply 903B & 903A to speed-II indicator (Item no. 8) & relay coil R15 (item no- 4, 5) & relay R13 (item no-4, 5) through diode & it's common terminal R13 & R15 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4) & relay NO terminal R13 & R15 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate second speed.
3. Select Position-III of the rotary switch 2 pole 3 way (Item no.3) for Transmission – I & II speed control in cab-II gives supply 904B & 904A to speed-III indicator (Item no.9) & relay coil R14 & R15 (item no-4, 5) & relay R12 & R13 (item no-4, 5) through diode & it's common terminal R12, R13, R14 & R15 (item no-6) is connected to 24V DC supply P24 which comes from diode (item no.4) & relay NO terminal R12, R13, R14, & R15 (item no-6) is connect solenoid valve (item no-1) of Transmission-I speed control and single solenoid valve (item no-1) of Transmission-II & operate third speed.

DRIVING CIRCUIT FOR MANUAL CONTROL CABIN-I & CABIN-II (3021009000)

DESCRIPTION

Speed limit 10KMPH Control (while Crane are Working):-

For safety aspect crane has provided with limit switches in rest/closed condition to provide vehicle full travel speed for longer distance travel.

The control circuit has been provided with individual limit switch at crane at rest which is connected with power supply to a electro pneumatic valve to actuate brake with a control pressure. This brake is operated two ways.

1. Automatic control form speedo meter signal operated
2. Manual remotely push button operated from both operator desk

Auto Speed limit 10KMPH Control:-

24V DC supply comes RL4 form speed cum recorder at 10-12KMPH, This supply goes to relay coil (item no.-15,16/R11) through speed limit selector switch (item no.14) which is located at both control panel desk & relay common point (item no.17, R11) is connected to 24V DC (P24), & relay NO point (item no.17, R11) is connected to Auto Magnetic Brake (item no.20).

Manual control:

24V DC supply comes (P24) Main MCB (item no.6) through diode (item no.4) to selector switch (item no.14) input point & o/p point of selector switch (item no.14) is connected to Auto Magnetic Brake (item no.20). After operating this switch brake will be apply.

ELECTRICAL POWER SUPPLY FOR CONTROL OF CRANE (3021019000)

DESCRIPTION

Electrical power supply provision has been made form cabin-I & cabin-II as desired during operation of Crane, Lifting platform, Measuring Pantograph.

Electrical power supply for Control of Crane-I

Powering from Cabin-I: - 24V DC supply from OHE controller (item no.-2) cabin-I to first crane control OFF/ON switch on crane control box.

Electrical power supply for Control of Crane-II

Powering from Cabin-II: - 24V DC supply from OHE controller (item no.-2) cabin-II to second crane control OFF/ON switch on crane control box.

CONTROL CIRCUIT- HEAD LIGHT, FLASHER LIGHT, MARKER LIGHT, TAIL LIGHT (3021009000 & 3021010000)

DESCRIPTION

HEAD LIGHT FRONT:

Multi position selector switch (item no.4) on drive desk is getting 110V DC power form Key operated Selector Switch (item no. 7,8) through MCB (item no.-11) . This selector switch is used to power forward head light (item no. 5) & read head light (item no. 5) as per desired requirement.

FLASHER LIGHT:

Flasher controller (item no.2) is getting 110V DC power form Key operated Selector Switch (item no. 7,8) . Through MCB (item no.12). This flasher light will be operate by Manual/Auto.

This flasher controller (item no.2) has in inbuilt two position - Auto position (emergency Brake Position) and Manual Position (driver operated in emergency).

Auto Operation for Flasher Light:

Flasher light (Item no.6) in cab-I & cab-II also gets positive input supply 508A & 508B from B.P. Pressure switch NO terminal (item no. 15), if B.P pressure pipe drops below 2.5kg or emergency brake is apply.

Manual Operation for Flasher Light:

During emergency in night if vehicle has be halted in main line, than driver has to make caution/alertness indication to fallowing train drivers on either side running track. This flasher switch should be kept in manual power position.

Marker Light:

During night & Foggy condition marker light has to be powered for vehicle moment direction. Driver has to make caution/alertness indication to fallowing train drivers on either side running track.

ON/OFF/ON selector switch (item no.22) on drive desk is getting 110V DC power form Key operated Selector Switch (item no. 7, 8) through MCB (item no.-13) . This selector switch is used to power marker light.

Tail Light:

During night & Foggy duration marker light has to be powered for vehicle moment direction. Driver has to make caution/alertness indication to fallowing train drivers on either side running track.

ON/OFF/ON selector switch (item no.22) on drive desk is getting 110V DC power form Key operated Selector Switch (item no. 7,8) through MCB (item no.-13) . This selector switch is used to power Tail light.

CONTROL CIRCUIT- CAB LIGHT & FAN FOR CAB-I & CAB-II (3021009000 & 3021010000)

FAN CONTROL:

FAN power supply is connected to MCB (item no. 16), For operating each fan's has individual one way switch located on side wall.

CAB LIGHT CONTROL:

Cabin Light power supply is connected to MCB (item no. 16), For operating each light's has individual one way switch located on side wall.

WIPER CONTROL:

Each cabin wiper motor and wiper arm are provided which operation OFF/ON switch on drive desk. Wiper motor (item no. 20) power supply is connected to MCB (item no. 15), For operating wiper has individual OFF/ON selection switch (item no. 1) located on driver desk.

ELECTRO PNEUMATIC CIRCUIT OF VCD INTERFACE CONTROL (3021011000)

DESCRIPTION

VIGILANCE CONTROL DEVICE (VCD):

Vigilance control device (Item no.1) interface control is provided for safety operation. It is connected with various operating input signals for vigilant operation, or to keep operator alert while vehicle is in starting condition. If driver does not operate Time to time any control such horn, brake & etc then V.C.D will give signal to penalty brake (electro pneumatic valve) to drop BP Brake pipe pressure for brake application.

VCD cycle reset operations:

1. Operation of Horn push button (Item no. 9)
2. Application/release of brake through SA9 brake valve whose pneumatic line is connected to B.C. pressure switch (Item no. 6)
3. Application/release of brake through A9 brake valve whose pneumatic line is connected to B.P. pressure switch (Item no. 7)
4. Vigilance cycle reset push button pressed

Operational control supply of the circuit is as follows:

24V DC positive output supply P24 & N24 through diode is connected to following:

- (i). Common terminal of Electro-pneumatic governor switch A8 (Item no.10)
- (ii). Common terminal of Horn pressure switch A48 (Item no. 5) in cab-I & cab-II
- (iii). Common terminal of B.C pressure switch A48 (Item no. 6)
- (iv). Common terminal of B.P pressure switch A40 (Item no. 7)

Operation of Horn push button (Item no.8) in cab-I gives positive output supply to Horn solenoid valve (Item no.4) in cab-I. From Horn solenoid valve (Item no.4) in cab-I, pneumatic line is connected to Horn pressure switch (Item no.5) in cab-I. After receiving pneumatic input from Horn solenoid valve (Item no.4), common terminal of Horn pressure switch (Item no.5) gives supply to NO terminal which further gives output to VCD unit (Item no.1) for resetting.

Operation of Horn push button (Item no.8) in cab-II gives positive output supply to Horn solenoid valve (Item no.4) in cab-II. From Horn solenoid valve (Item no.4) in cab-II, pneumatic line is connected to Horn pressure switch (Item no.5) in cab-II. After receiving pneumatic input from Horn solenoid valve (Item no.2), common terminal of Horn pressure switch (Item no.5) gives supply to NO terminal which further gives output to VCD unit (Item no.1) for resetting.

ELECTRO PNEUMATIC CIRCUIT OF VCD INTERFACE CONTROL (3021011000)

1) Application/release of brake through A9 brake valve whose pneumatic line is connected to B.P. pressure switch (Item no.7):

- Pneumatic line is connected from A9 brake valve to B.P. pressure switch (Item no.7). When A9 brake is applied, B.P. pressure switch (Item no.7) gets pneumatic input from A9 brake valve and contact terminal of B.P. pressure switch (Item no.7) changes. 24V DC positive output supply goes from Common terminal of B.P pressure switch (Item no.7) to NO terminal of B.P pressure switch (Item no.7) which further gives output to VCD unit (Item no.1) for resetting.

2) Application/release of brake through SA9 brake valve whose pneumatic line is connected to B.C. pressure switch (Item no.6)

- Pneumatic line is connected from SA9 brake valve to B.C. pressure switch (Item no.6). When A9 brake is applied, B.C. pressure switch (Item no.6) gets pneumatic input from SA9 brake valve and contact terminal of B.C. pressure switch (Item no.6) changes. 24V DC positive output supply goes from Common terminal of B.C. pressure switch (Item no.6) to NO terminal of B.C. pressure switch (Item no.6) which further gives output to VCD unit (Item no.1) for resetting.

3) Vigilance cycle reset push button pressed:

- VCD reset push button is pressed by operator showing alertness, penalty brake will not be applied in vehicle with in specified time period.

PARKING BRAKE CONTROL DESCRIPTION (3021014000)

Parking brake Control at Driver Desk-I:

110V DC positive supply (P110C1) comes from selector switch (item no.-7, 8) to parking brake MCB (Item no. 1) locked at MCB box at operator desk. MCB (item no. 1) output is connect to push button (item. 2 & 3).

Parking brake Application switch NO-Type (Item no.2) and parking brake Release switch NO-Type (Item no.3). The supply P110 connected to common terminal of pressure switch (parking brake feedback indication) (Item no.7) through diode.

When operator press (item no-3) parking brake release switch then supply goes to parking brake electro pneumatic selector valve (item no-8) to energized the valve to release parking brake and indication (item no. 5) will glow through pressure switch.

When operator press (item no-2) parking brake application switch then supply goes to parking brake electro pneumatic selector valve (item no-8) to energized the valve to application parking brake and indication (item no. 4) will glow through pressure switch.

Parking brake Control at Driver Desk-II:

110V DC positive supply (P110C2) comes from selector switch (item no.-7,8) to parking brake MCB (Item no. 1) locked at MCB box at operator desk. MCB (item no. 1) output is connect to push button (item. 2 & 3).

Parking brake Application switch NO-Type (Item no.2) and parking brake Release switch NO-Type (Item no.3). The supply P110 connected to common terminal of pressure switch (parking brake feedback indication) (Item no.7) through diode.

When operator press (item no-3) parking brake release switch then supply goes to parking brake electro pneumatic selector valve (item no-8) to energized the valve to release parking brake and indication (item no. 5) will glow through pressure switch.

When operator press (item no-2) parking brake application switch then supply goes to parking brake electro pneumatic selector valve (item no-8) to energized the valve to application parking brake and indication (item no. 4) will glow through pressure switch.

11. INSTRUCTIONS FOR DRIVER / OPERATOR

Although the instructions in detail are explained in the operating manual. This instruction should be kept in driver cab as ready reference.

- i. Ensure correct levels of lub. Oil, radiator water, hydraulic oil, transmission oil, ADGB oil and fuel in tank.
- ii. Ensure shut off valve of hydraulic tank is in ON position.
- iii. Ensure swiveling platform & pantograph are fully lowered & locked.
- iv. At Driver's operating cabin: - electrical cabin selector switch, MCB & cabin isolating shut off cocks should be made ON for operation. Ensure non operative cabin pneumatic shut off cocks & electrical power cutoff switch should be kept in OFF position.
- v. Don't engage the transmission in any direction if MR pressure & parking brake pressure are below 5 kg/cm² (Cut in - cutout pressure 7 kg/cm² – 8 kg/cm²).
- vi. Blow Horn & release the brakes (BC pressure 0 kg/cm² & parking above 5 kg/cm²) before engaging the transmission.
- vii. Before changing the direction (forward to reverse or vice – versa) of vehicle, it should stop fully.
- viii. Before stopping the engine bring engine throttle & transmission selection lever in idle / neutral position.
- ix. Whenever driver leaves the vehicle: - apply parking brake; ensure transmission selector is in neutral. Stop the engine, take out ignition key and all MCB & main switches should be in OFF position. Isolate the cabin cocks by shut off cocks.
- x. Whenever vehicle is hauled; parking brake should be released manually by quick release lever / cable are provided at bogie side hanger bracket.
- xi. Be vigilant about VCD functioning to avoid unwarranted penalty brake application.
- xii. Before starting the Aux. engine for crane. Pl. check the level of Lube oil for sufficient level.
- xiii. To record the Aux. engine operation - hours, Pl. maintains a log – book to ensure timely change of Lube oil (Refer manual).



PHOOLTAS TRANSRAIL LIMITED

RAIL BOUND MOBILE VEHICLE (8 - WHEELER)

MODEL : RBMV.02.B

G A U G E : 1676 mm



PARTS MANUAL

REFERENCE NO. PM/302B/3K23, REV.: -00

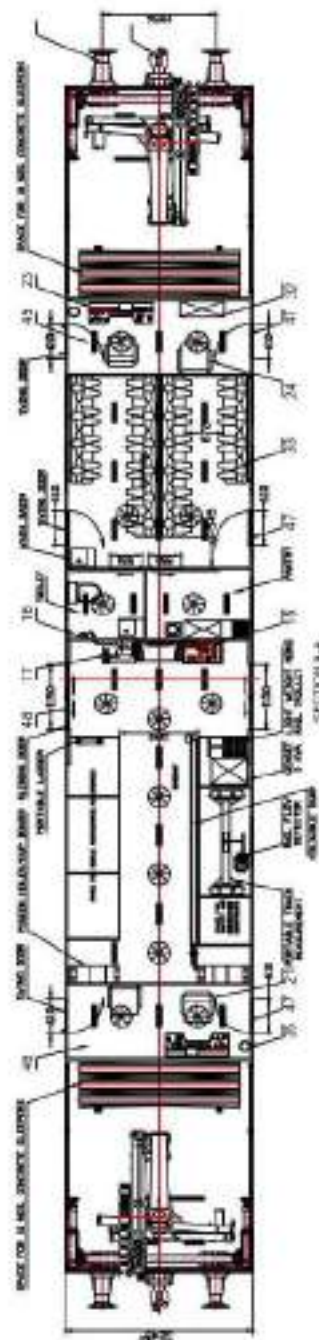
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 **phooltas**
 **phooltas**
 **info@phooltas.org**
 **www.phooltas.org**



B.O: Plot No.- 1A, Sector-7,IIE, SIDCUL, Haridwar, Uttarakhand-249403 (INDIA)
H.O.: Layak Enclave (East), Sahay Nagar, Phulwari Sharif, Patna Bihar-801506 (INDIA)

INDEX			
Sl. No.	Description	Part No.	Page No.
1	INDEX		2-2
2	GENERAL LAYOUT	3020000000	3-5
3	POWER PACK ARRANGEMENT	3020100000	6-7
4	AXLE DRIVE GEAR BOX ASSEMBLY	3020501000	8-10
5	TORQUE ARM ASSEMBLY	3020121000	11-12
6	HYDRAULIC TANK 400 L	3020015000	13-15
7	WHEEL & AXLE (POWERED)	3020500000	16-17
8	WHEEL & AXLE (NON-POWERED)	3020502000	18-19
9	BOGIE GENERAL ARRGT.	3021600000	20-21
10	BOGIE BOLSTER SUSPENSION ARRGT.	3020300000	22-25
11	BOGIE BRAKE ARRGT.	3020400000	26-29
12	AXLE BOX GUIDE ARRGT.	3020503000	30-31
13	ROOF WATER TANK	3020054000	32-33
14	INTEGRAL OIL SUMP	3029100000	34-36
15	COOLING CIRCUIT OF TRANSMISSION AND RADIATOR	3021100000	37-38
16	HYDRAULIC CIRCUIT WITH COMPONENTS	3020900000	39-40
17	PENUMATIC CIRCUIT WITH COMPONENTS	3020800000	41-43
18	TRANSMISSION AUXILIARY LUBRICATION CIRCUIT	3021101000	44-45
19	COOLENT TANK ASSLY	3021102000	46-47
20	24V POWER SUPPLY FOR ENGINE-I & ENGINE-II	3021001000	48-49
21	ENGINE-I ECU-I CONTROL DIAGRAM	3021002000	50-51
22	ENGINE-II ECU-II CONTROL DIAGRAM	3021003000	52-53
23	ELECTRICAL INTERFACE & ENGINE SHUT DOWN SAFETY CAB-1 & CAB-2	3021004000	54-55
24	ELECTRICAL CIRCUIT ENGINE & TRANSMISSION SAFETY CONTROL	3021005000	56-57
25	DRIVE SELECTION CIRCUIT IN BOTH CABINS(ENGINE-I & ENGINE II)	3021006000	58-59
26	DRIVING CIRCUIT FOR MANUAL & AUTO CONTROL (CABIN-I & CABIN II)	3021007000	60-61
27	110V DC ELECTRICAL CIRCUIT & ELECTRICAL BLOCK DIAGRAM	3021008000	62-64
28	CONTROL CIRCUIT - HEAD LIGHT, CAB LIGHT & FAN FOR CAB-I	3021009000	65-66
29	CONTROL CIRCUIT - HEAD LIGHT, CAB LIGHT & FAN FOR CAB-II	3021010000	67-68
30	ELECTRO PNEUMATIC CKT OF VCD INTERFACE CONTROL	3021011000	69-70
31	AC CONTROL DIAGRAM -I	3021012000	71-73
32	AC CONTROL DIAGRAM -II	3021013000	74-75
33	ELECTRO PNEUMATIC CONTROL CIRCUIT OF PARKING BRAKE	3021014000	76-77
34	COMMUNICATION SYSTEM	3021015000	78-79
35	PANTRY EQUIPMENT DIAGRAM	3021016000	80-81
36	CAMERA & MONITOR DIAGRAM	3021017000	82-83
37	CONTROL CIRCUIT OF OHE DRIVE	3021018000	84-85
38	CRANE CONTROL DIAGRAM	3021019000	86-87
39	GAUGE DIAGRAM FOR CAB-I	3021020000	88-89
40	GAUGE DIAGRAM FOR CAB-II	3021021000	90-91



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(10) 205 (8-11) THE MEDICAL JOURNAL OF THE
(11) THE AMERICAN MEDICAL ASSOCIATION
(12) THE AMERICAN MEDICAL ASSOCIATION

GENERAL LAYOUT OF 8-WHEELER RBMY

MODEL	RMV12.9
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PROJECT	ASMY 02.9-140C
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2) GENERAL LAYOUT (3020000000)

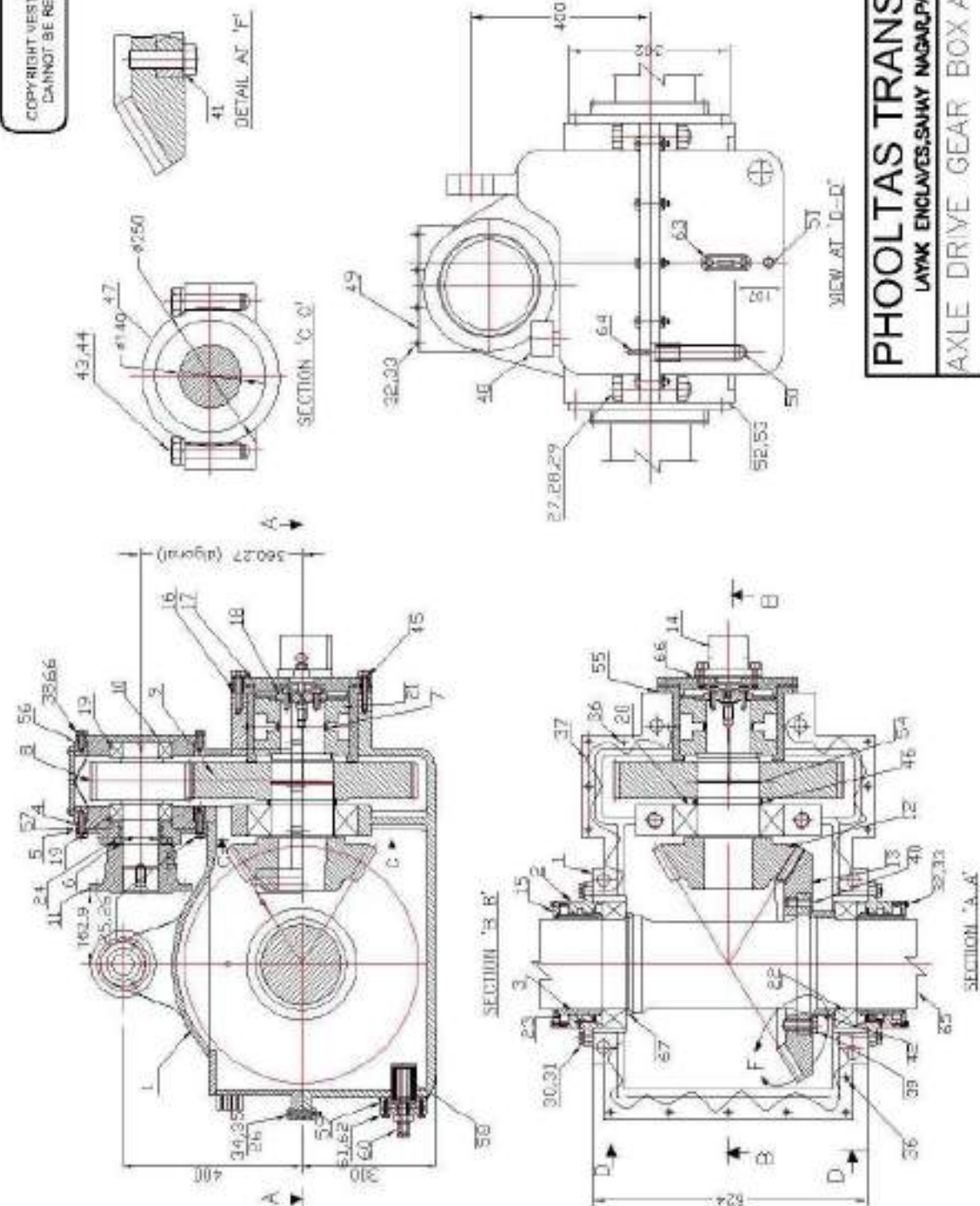
S. NO.	DESCRIPTION	PART NO.	QTY.
1	ENGINE	3020001000	2
2	TRANSMISSION	3020002000	2
3	CARDAN SHAFT – 1 (TRANS TO ADGB)	3020003000	2
4	CARDAN SHAFT – 2 (ENGINE TO TRANS)	3020004000	2
5	CARDAN SHAFT – (AUXILIARY ALT. DRIVE)	3020005000	2
6	AXLE DRIVE GEAR BOX (HYDRODYNAMIC DRIVE)	3020006000	2
7	BOGIE	3020007000	2
8	WHEEL	3020008000	8
9	COIL SPRING SUSPENSION ASSLY.	3020009000	8
10	CLASP TYPE BRAKE ASSLY.	3020010000	8
11	AIR CLEANERS	3020011000	2
12	RADIATOR, ROOF MOUNTED	3020012000	1
13	AIR COMPRESSOR (ENGINE MOUNTED)	3020013000	2
14	AUXILIARY ALTERNATORS, KEL 4.5 KW, 110V/ EQUIVALENT	3020014000	2
15	HYDRAULIC TANK WITH OIL COOLER	3020015000	1
16	COOLANT TANK 100 LTS. WITH WATER FITTING ARRGT. TO RADIATOR	3020016000	1
17	WATER RAISING APPARATUS	3020017000	1
18	FUEL TANK – 700 LTRS.	3020018000	1
19	110V BATTERY BOX	3020019000	1
20	T.C COOLER	3020020000	2
21	DRIVER'S SEAT	3020021000	2
22	CATTLE GUARD	3020022000	2
23	CONTROL PANEL	3020023000	2
24	FOLDABLE SEATS	3020024000	2
25	FIXED RAILING	3020025000	12
26	CAMERA	3020026000	2
27	HORN	3020027000	2
28	STABILIZERS	3020028000	4
29	HAND HOLDS	3020029000	16
30	FLASHER LIGHTS	3020030000	2
31	FOOT STEPS	3020031000	8
32	TOOL BOX	3020032000	2
33	CREW SEATS	3020033000	20
34	C.B.C COUPLERS	3020034000	2
35	FIRE EXTINGUISHERS	3020035000	2
36	CRANE	3020036000	2
37	AIR CONDITIONER	3020037000	4
38	BUFFERS	3020038000	4
39	MARKER LIGHT	3020039000	4
40	LIFTING BRACKET	3020040000	4
41	ELECTRICAL WIPER AND WASHER ASSLY. (2 FRONT & 2 REAR)	3020041000	4

42	HEAD LIGHTS	3020042000	2
43	RAIL GUARD ARRGT.	3020043000	2
44	RAIL WATER CUTTER	3020044000	4
45	CAB – 1	3020045000	1
46	CAB – 2	3020046000	1
47	SWING DOOR (CABIN & STAFF ROOM)	3020047000	6
48	SLIDING DOOR (MIDDLE)	3020048000	2

3) POWER PACK ARRANGEMENT (3020100000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1.	ENGINES,MAKE: ASHOK LEYLAND.MODEL:N6 DEVELOPING 450HP@2200 RPM	3020101000	02 NOS
2.	TRANSMISSIONS, AVTEC CRT 5633 / EQUIVALENT	3020102000	02 NOS
3.	AXLE DRIVE GEAR BOXES	3020103000	02 NOS
4.	AUXILIARY ALTERNATORS	3020104000	02 NOS
5.	CARDAN SHAFTS-1	3020105000	02 NOS
6.	CARDAN SHAFT-2	3020106000	02 NOS
7.	CARDAN SHAFT-3	3020107000	02 NOS
8.	VAULKAN COUPLERS	3020108000	02 NOS
9.	TORQUE ARM ASSEMBLIES	3020109000	02 NOS
10.	RADIATORS	3020110000	01 NOS
11.	AIR CLEANERS	3020111000	02 NOS
12.	MUFFLERS	3020112000	02 NOS
13.	T.C. COOLERS	3020113000	02 NOS
14.	FUEL TANK-700 LTRS	3020114000	01 NO
15.	HYDRAULIC TANK-400 LTRS	3020115000	01 NO
16.	ENGINE FLYWHEELS	3020116000	02 NOS
17.	ANTI VIBRATION MOUNTINGS	3020117000	14 NOS
18.	ANTI VIBRATION MOUNTINGS	3020118000	08 NOS
19.	ANTI VIBRATION MOUNTINGS	3020119000	08 NOS
20.	BATTERY BOXES – 24 V	3020120000	01 NO
21.	BATTERY BOXES – 110 V	3020121000	02 NOS
22.	COOLANT TANK WITH WATER FILLING ARRGT.	3020122000	01 NO
23.	TRAP DOORS-1	3020123000	02 NOS
24.	TRAP DOORS-2	3020124000	02 NOS
25.	SAFETY CHAINS	3020125000	As Req'd.
26.	SAFETY STRAPS	3020126000	As Req'd.
27.	DUCT FOR PIPES	3020127000	01 NO
28.	HYDRAULIC PUMP FOR RADIATOR FAN DRIVE	3020128000	02 NOS
29.	HYDRAULIC PUMP FOR CRANE OPERATION	3020129000	02 NOS
30.	P.T.O ASSEMBLY	3020130000	02 NOS

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LAYAK ENCLAVES, SAHAY NAGAR, PATNA - 801506 (INDIA)

AXLE DRIVE GEAR BOX ASSY. (BI-DIRECTIONAL PUMP)

MODEL OHE.01.B

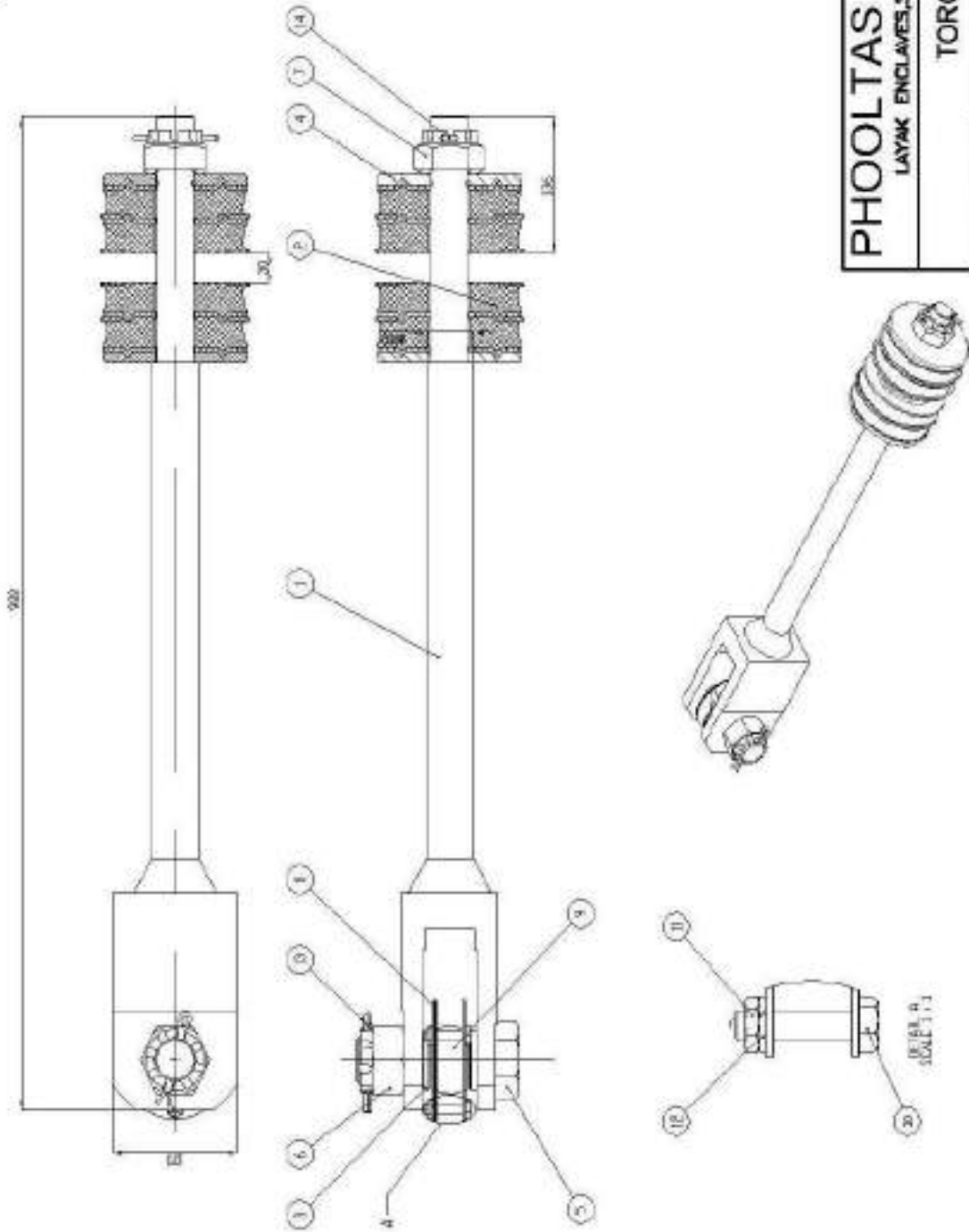
PROJECT	OHE.O1.B-DFCC
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4) AXLE DRIVE GEAR BOX ASSEMBLY (3020501000)

S. No.	DESCRIPTION	PART NO.	QTY.
1.	GEAR BOX HOUSING	3020501010	01 Set.
2.	SEAL CARRIER OUTPUT	3020501020	02 Nos
3.	SPACER SEAL OUTPUT	3020501030	02 Nos
4.	BEARING CARRIER INPUT	3020501040	01 No
5.	SEAL CARRIER INPUT	3020501050	01 No
6.	SPACER SEAL INPUT	3020501060	01 No
7.	SPACER INPUT	3020501070	01 No
8.	HELICAL PINION	3020501080	01 No
9.	HELICAL GEAR	3020501090	01 No
10.	DUST COVER INPUT	3020501100	01 No
11.	INPUT FLANGE	3020501110	01 No
12.	BEVEL PINION – 23 T	3020501120	01 No
13.	BEVEL GEAR 37 T	3020501130	01 No
14.	LUB. OIL PUMP	3020501140	01 No
15.	DUST COVER OUTPUT	3020501150	02 Nos
16.	AUXILIARY BRG. CARRIER	3020501160	01 No
17.	AUXILIARY DUST COVER	3020501170	01 No
18.	BRG. LOCKING PLATE	3020501180	01 No
19.	TAPER ROLLER BRG.	3020501190	02 Nos
20.	SPHERICAL ROLLER BRG.	3020501200	01 No
21.	TAPER ROLLER BRG.	3020501210	02 Nos
22.	TAPER ROLLER BRG.	3020501220	02 Nos
23.	OIL SEAL	3020501230	02 Nos
24.	OIL SEAL	3020501240	01 Nos
25.	HEX. HEAD BOLT	3020501250	06 Nos
26.	SPRING WASHER	3020501260	15 Nos
27.	HEX. HEAD BOLT	3020501270	06 Nos
28.	HEX. NUT	3020501280	06 Nos
29.	SPRING WASHER	3020501290	06 Nos
30.	HEX. HEAD BOLT	3020501300	12 Nos
31.	SPRING WASHER	3020501310	12 Nos
32.	HEX. HEAD BOLT	3020501320	20 Nos
33.	SPRING WASHER	3020501330	20 Nos
34.	HEX. HEAD BOLT	3020501340	11 Nos
35.	HEX. NUT	3020501350	11 Nos
36.	DOWEL PIN	3020501360	02 Nos
37.	PACKING WOOLEN	3020501370	2 Nos
38.	HEX. HEAD BOLT	3020501380	08 No
39.	HEX. HEAD BOLT	3020501390	06 No
40.	DOWEL PIN	3020501400	06 No
41.	LOCK SHEET	3020501410	03 Nos

42.	SPACER	3020501420	01 No
43.	HEX. HEAD BOLT	3020501430	02 Nos
44.	SPRING WASHER	3020501440	02 Nos
45.	SOCKET HD.BOLT	3020501450	06 Nos
46.	SPACER	3020501460	01 No
47.	UPPER HOUSING	3020501470	01 No
48.	FILLER BREATHER ASSLY.	3020501480	01 No
49.	INSPECTION COVER	3020501490	01 No
50.	DIPSTICK	3020501500	01 No
51.	DRAIN PLUG.	3020501510	01 No
52.	SHIM 0.2 THK.	3020501520	04 Nos
53.	GASKET	3020501530	04 Nos
54.	OUTPUT SHAFT	3020501540	01 No
55.	GASKET	3020501550	01 No
56.	GASKET	3020501560	01 No
57.	GASKET	3020501570	01 No
58.	½" BSP SUCTION STRAINER	3020501580	01 No
59.	LOCKING PLATE	3020501590	01 No
60.	STR. ADOPTER	3020501600	01 No
61.	HEX. BOLT	3020501610	04 Nos
62.	SPRING WASHER	3020501620	04 Nos
63.	LEVEL GAUGE	3020501630	01 No
64.	DIPSTICK GAUGE	3020501640	01 No
65.	AXLE (POWER)	3020501650	01 No
66.	GASKET PUMP MOUNTING FLANGE	3020501660	01 No
67.	SPACER	3020501670	01 No

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TORQUE ARM ASSLY.

MODEL OHE.O1.B

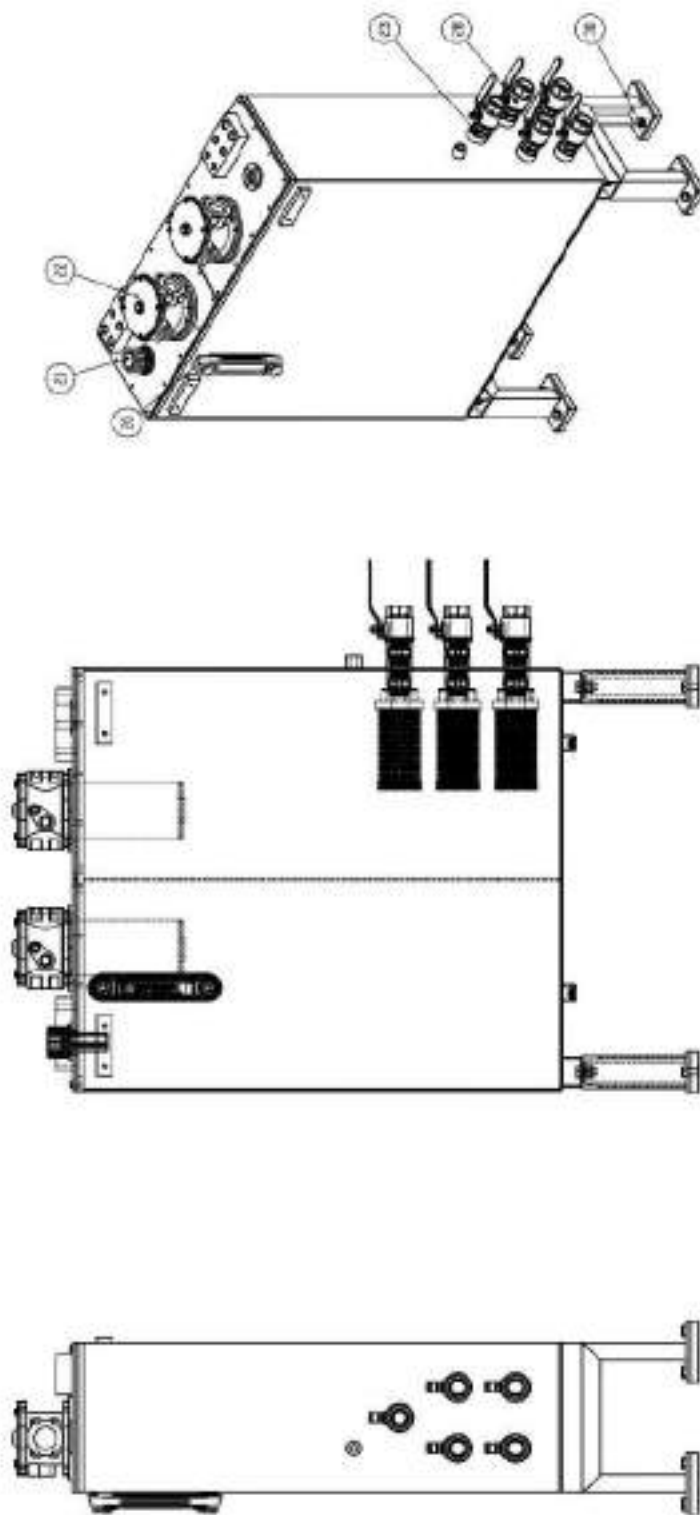
PROJECT OHE.O1.B-DFCC

5) TORQUE ARM ASSEMBLY (3020121000)

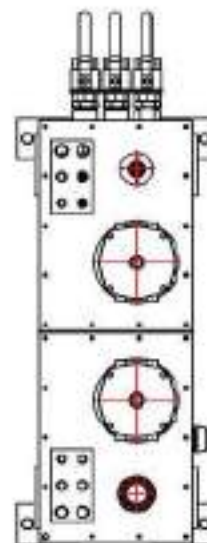
S.NO.	DESCRIPTION	PART NO.	QTY.
1.	TORQUE ARM	3020121010	01 NO
2.	SPRING DISC	3020121020	04 NOS
3.	SPACER	3020121030	02 NOS
4.	END PLATE	3020121040	02 NOS
5.	HEX HEAD BOLT	3020121050	01 NO
6.	CASTLE NUT	3020121060	01 NO
7.	CASTLE NUT	3020121070	01 NO
8.	BRG. RETAINER	3020121080	02 NOS
9.	PLAIN SPERICAL BEG. GEH 45 ES 2 RS	3020121090	01 NO
10.	HEX HEAD BOLT	3020121100	03 NOS
11.	HEX HEAD NUT	3020121110	03 NOS
12.	SPRING WASHER	3020121120	03 NOS
13.	SPLIT PIN D 8 X 75	3020121130	01 NO
14.	SPLIT PIN D 8 X 75	3020121140	01 NO

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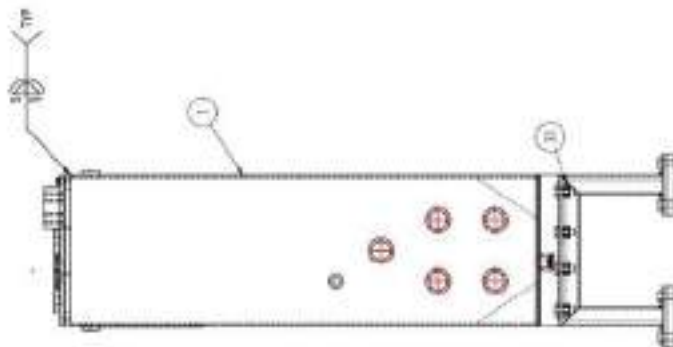
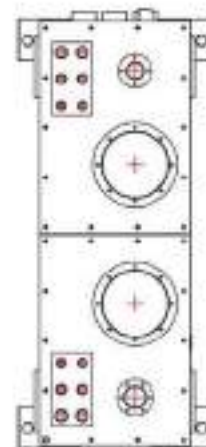
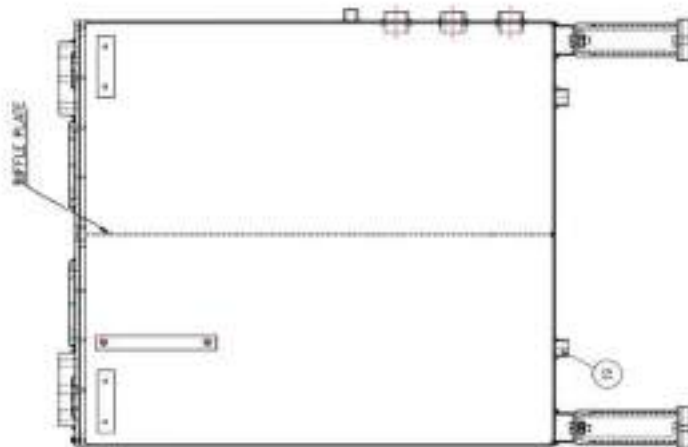
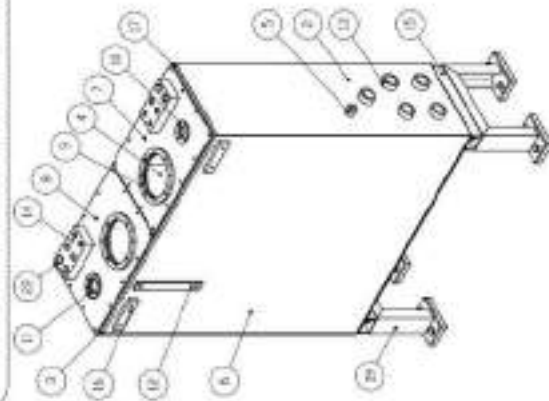


PHODITAS TRANSRAIL LIMITED	
HYDRAULIC TANK 400 L	
MODEL	RMV162.3
PROJECT	RMV162-3000



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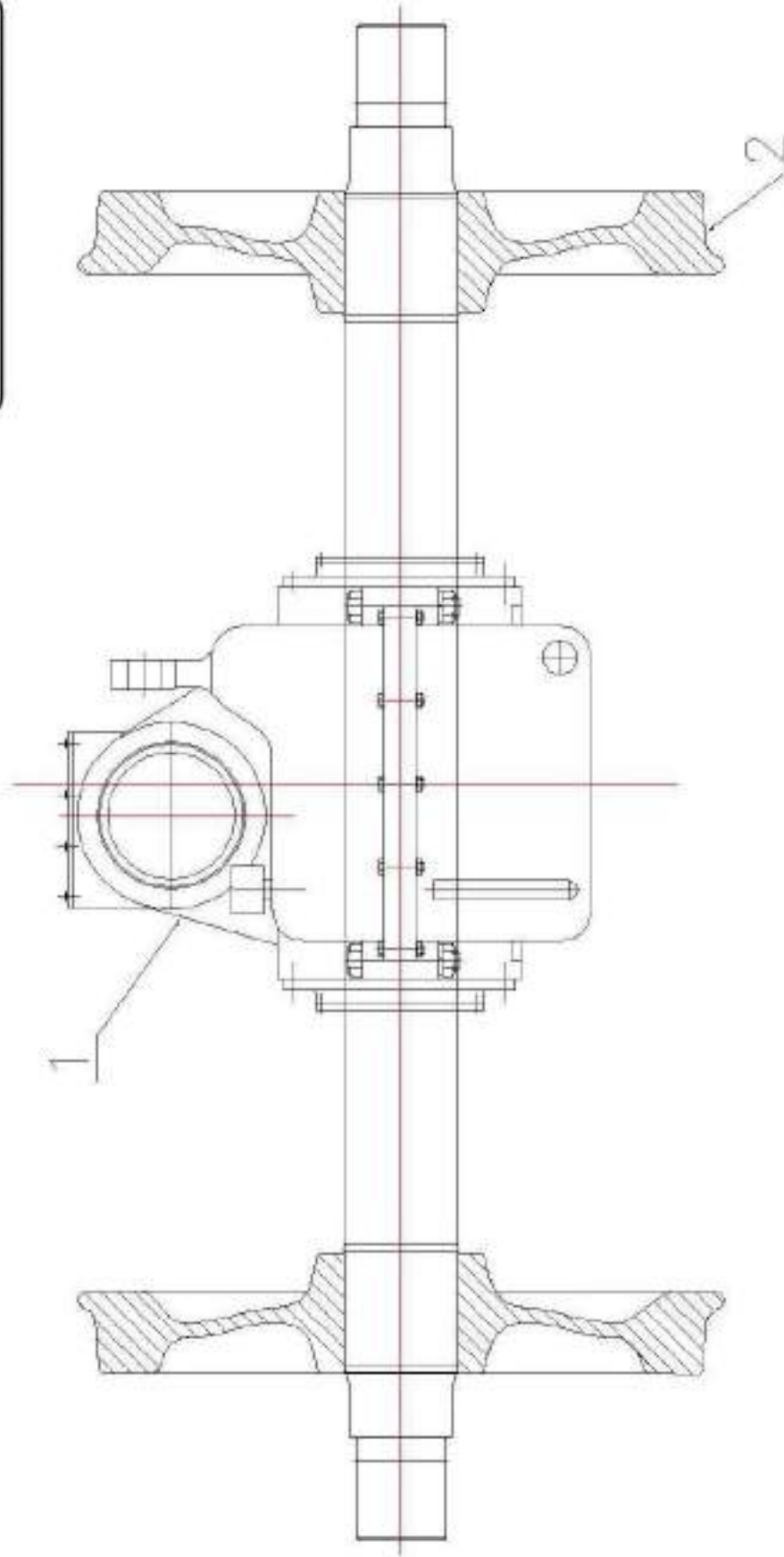


PHOOLAS TRANSRAIL LIMITED	
HYDRAULIC TANK 400 L	
MODEL	RBMVJ2B
PROJECT	RBMVJ2B-0711

6) HYDRAULIC TANK 400L (3020015000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	SOCKET-1	3020015010	1 Nos
2	RING-1	3020015020	2 Nos
3	RING-2 FOR LOW LEVEL SAFETY SWITCH	3020015030	1 No
4	RING-3 FOR FILLER BREATHER	3020015040	1 No
5	LEVEL GUAGE BACK PLATE 295X35X8	3020015050	1 No
6	SOCKET-2	3020015060	5 Nos
7	BLOCK	3020015070	2 Nos
8	U BEND PLATE	3020015080	2 Nos
9	ACCESSORIES MOUNTING PAD	3020015090	4 Nos
10	GUSSET-1	3020015100	1 No
11	SOCKET-3	3020015110	2 Nos
12	TANK STAND	3020015120	2 Nos
13	HEX HEAD BOLT M8	3020015130	28 Nos
14	SPRING WASHER M8	3020015140	28 Nos
15	HEX HEAD BOLT M16	3020015150	8 Nos
16	HEX HEAD NUT M16	3020015160	8 Nos
17	LEVEL INDICATOR	3020015170	1 No.
18	FILLER BREATHER	3020015180	1 No.
19	RETURN FILTER ASSLY. 1-1/2" PORT 150 MICRON	3020015190	2 Nos
20	MS STR. 1-1/2" BSP(M) X 1-1/2" BSP (M) C	3020015200	10 Nos
21	SUCTION STRAINER 1-1/2" PORT	3020015210	5 Nos
22	MAGNETIC DRAIN PLUG ½"	3020015220	2 Nos
23	SHUT OFF COCK 1-1/2"	3020015230	5 Nos

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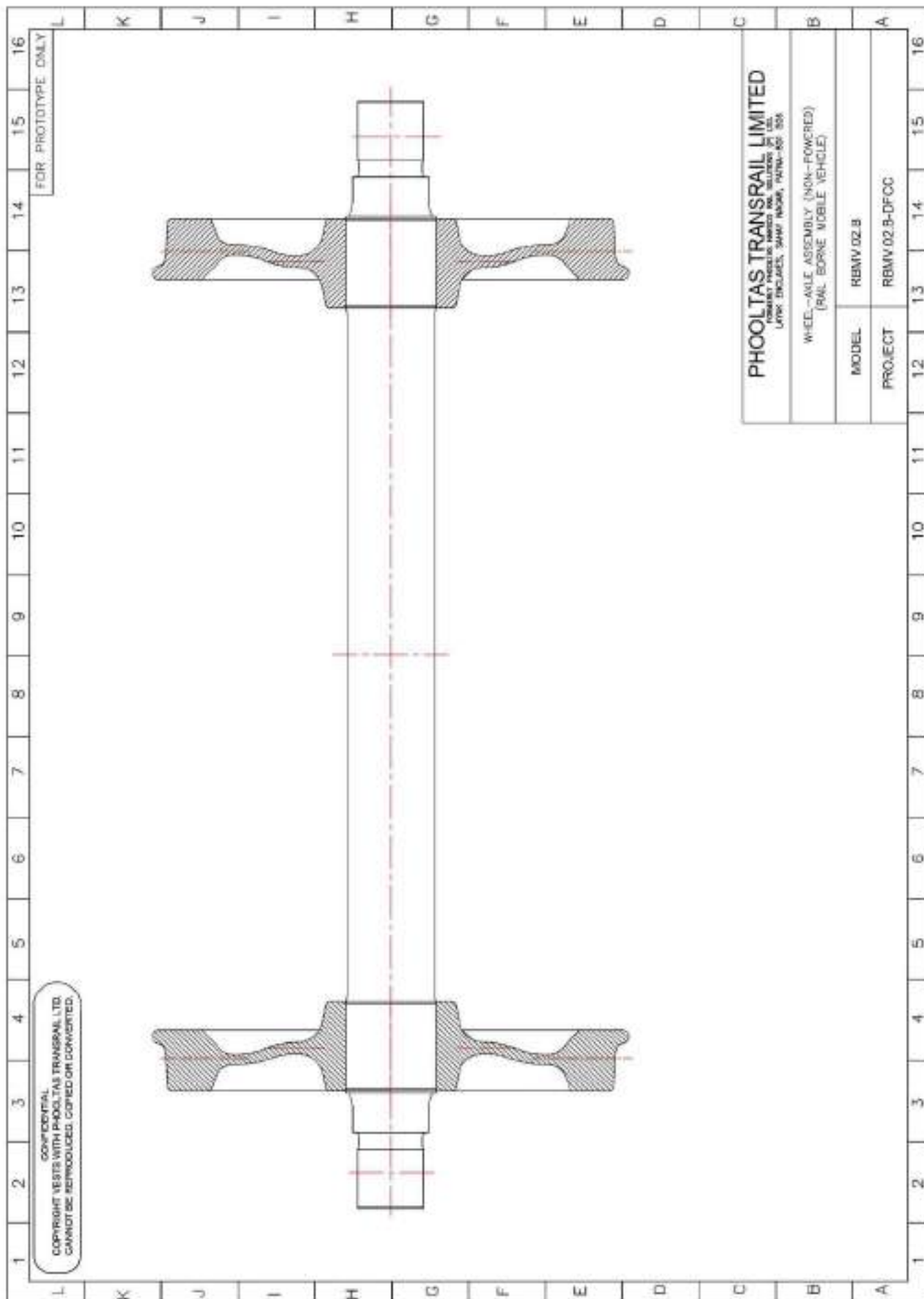
WHEEL & AXLE (POWERED)

MODEL OHE.O1.B

PROJECT OHE.O1.B-DFCC

7) WHEEL & AXLE (POWERED) (3020500000)

S.NO.	DESCRIPTION	PART NO.	QTY.
1.	AXLE DRIVE ASSLY.	3020500100	02 NOS
2.	WHEELS	3020500200	04 NOS



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8) WHEEL AND AXLE (NON- POWERED) –(3020502000)

S.NO.	DESCRIPTION	PART NO.	QTY.
01.	WHEELS	3020502100	04 NOS
02.	AXLE (NON-POWERED)	3020502200	02 NOS

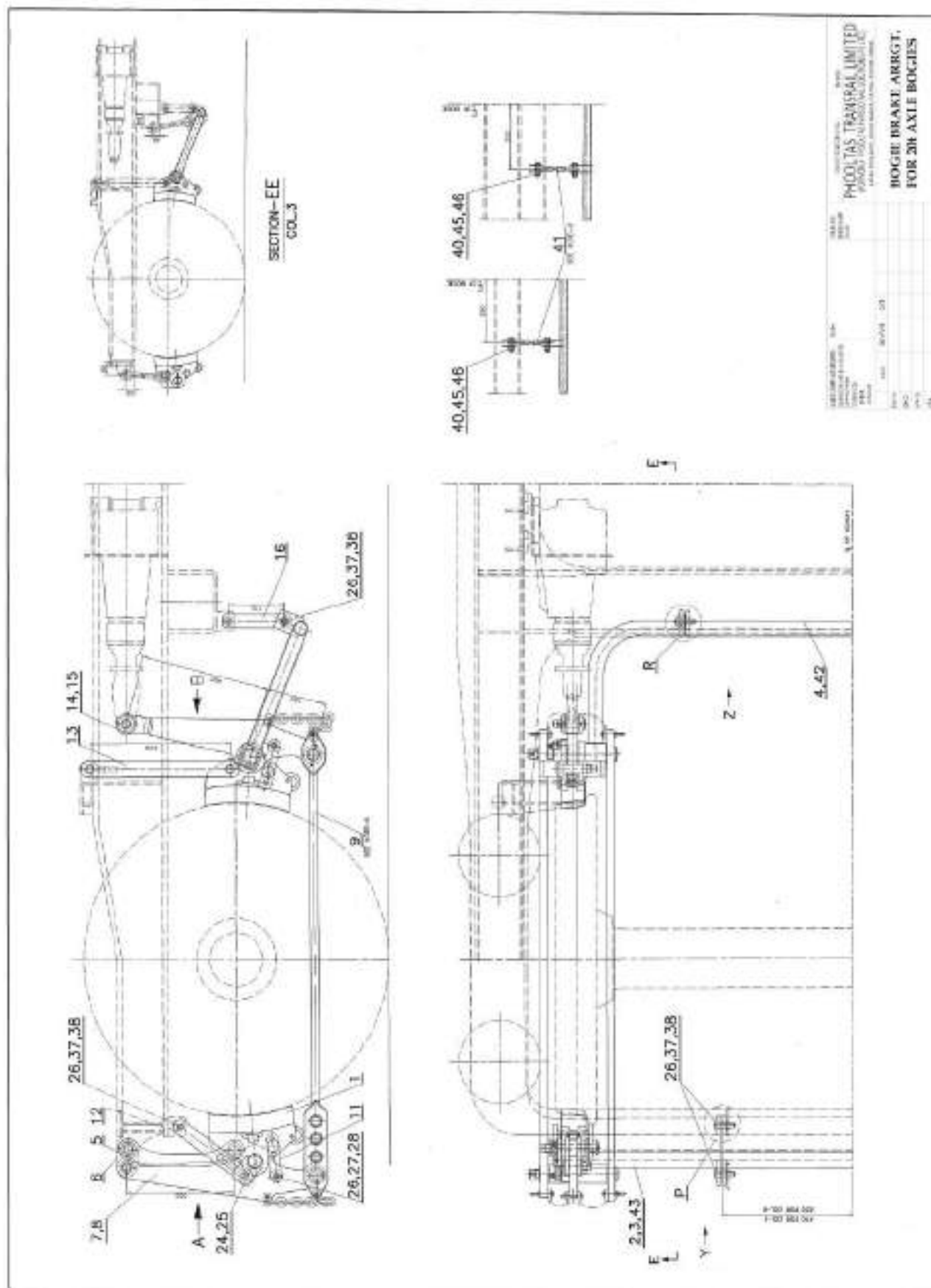
9). BOGIE GENERAL ARRGT.(3021600000)

S.NO.	DISCERPTION	PART NO.	QTY.
1	AXLE BOX GUIDE ARRGT.	3021600100	4 Nos
2	PRIMARY HELICAL COIL SPRING	3021600200	8 Nos
3	BOGIE BOLSTER SUSPENSION ARRGT.	3021600300	1 No
4	BOGIE BOLSTER	3021600400	1 No
5	HYDRODYNAMIC ADGB	3021600500	1 No
6	BRAKE CYLINDER	3021600600	4 Nos
7	PARKING BRAKE CYLINDER	3021600700	4 Nos
8	BOGIE FRAME	3021600800	1 No
9	BOGIE BRAKE ARRGT.	3021600900	1 No

10). BOGIE BOLSTER SUSPENSION ARRGT. (3020300000)

S.NO.	DISCERPTION	PART NO.	QTY.
1	LOWER SPRING BEAM ARRGT.	3020300100	1 No
2	BOLSTER NEST	3020300200	1 No
3	CENTRE PIVOT ARRGT.	3020300300	2 Nos
4	STOP PLATE	3020300400	1 No
5	BOTTOM BUSH	3020300500	1 No
6	TOP BUSH	3020300600	1 No
7	DISTANCE TUBE	3020300700	1 No
8	SPLIT RING COMPLETE	3020300800	1 No
9	HEX. HD SCREW M16x40-5.6	3020300900	2 Nos
10	SPRING LOCK WASHER B16	3020301000	2 Nos
11	SPLIT PIN 5x56	3020301100	4 Nos
12	CENTER PIVOT PIN COMPLETE	3020301200	1 No
13	SHEAR BLOCK	3020301300	2 Nos
14	SHEAR BLOCK	3020301400	2 Nos
15	HEX. HEAD BOLT COMPLETE	3020301500	4 Nos
16	GUIDE BUSH	3020301600	1 Nos
17	HANGER	3020301700	16 Nos
18	SEDDLE	3020301800	32 Nos
19	PIN	3020301900	16 Nos
20	EQUALISING STAY	3020302000	4 Nos
21	STAY TUBE	3020302100	2 Nos
22	TUBE COMPLETE	3020302200	2 Nos
23	RIB 5x50x70	3020302300	2 Nos
24	RIB 5x50x120	3020302400	1 Nos
25	NYLON BUSH	3020302500	4 Nos
26	STAY TUBE	3020302600	4 Nos
27	WEARING PLATE	3020302700	4 Nos
28	WERRING PIECE	3020302800	4 Nos
29	SCREW	3020302900	4 Nos
30	SPLIT PIN Ø8x45	3020303000	8 Nos
31	HEX. NUT M30-4	3020303100	8 Nos
32	SPRING LOCK WASHER B30	3020303200	8 Nos
33	SPECIAL PIN	3020303300	8 Nos
34	RUBBER SNUBBER	3020303400	8 Nos
35	SPRING LOCK WASHER B10	3020303500	32 Nos
36	SHOOCK ABSORBER	3020303600	4 Nos
37	FLANGE	3020303700	8 Nos
38	SPLIT PIN Ø4x45	3020303800	32 Nos
39	HEX NUT M20-4	3020303900	16 Nos
40	SPRING LOCK WASHER B20	3020304000	32 Nos
41	HEX. HD. BOLT M20x120-4.6	3020304100	16 Nos
42	RUBBER PLATE	3020304200	16 Nos

43	CHEESE HD. SCREW M10x20	3020304300	32 Nos
44	SAFETY STRAP COMPLETE	3020304400	8 Nos
45	HEX . HD BOLT M20x120-4.6	3020304500	16 Nos
46	CASTLE NUT M20-8	3020304600	16 Nos
47	STRIKING PLATE	3020304700	8 Nos
48	LOWER SPRING BEAM ARRGT.	3020304800	4 Nos
49	COMPENSATING RING	3020304900	As Required
50	STRIKING PLATE	3020305000	8 Nos
51	PUNCHED WASHER A18	3020305100	4 Nos

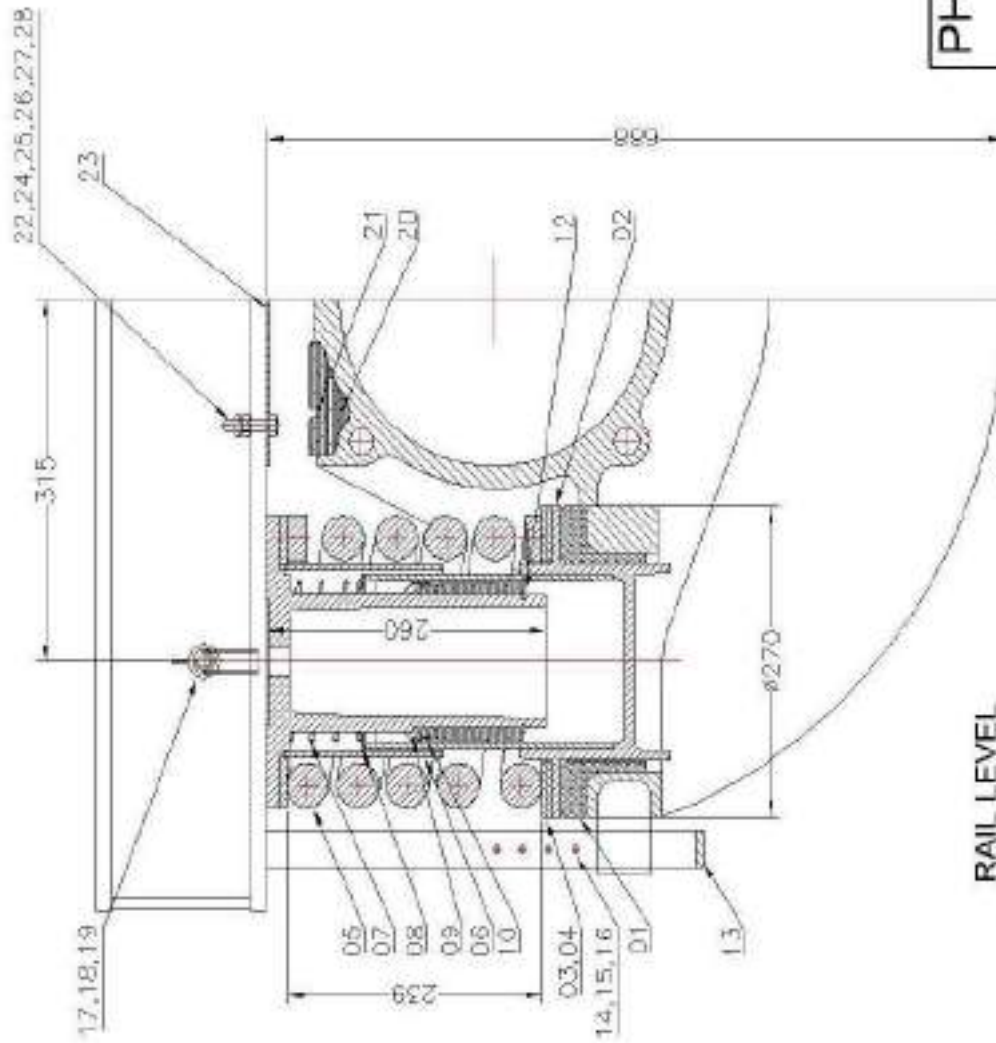


11). BOGIE BRAKE ARRGT. (3020400000)

S.NO.	DESCRIPTION	PART NO.	QTY.
1	BRAKE HEAD & BLOCK COMPLETE	3020400100	16 Nos
2	BRAKE HEAD ASSEMBLY	3020400200	16 Nos
3	BRAKE HEAD FABRICATED	3020400300	16 Nos
4	NYLON BUSH	3020400400	32 Nos
5	NYLON BUSH	3020400500	32 Nos
6	K-TYPE NON-ASBESTOS BASED BRAKE BLOCK	3020400600	16 Nos
7	KEY	3020400700	16 Nos
8	SPRING Ø4x280 APPROX	3020400800	16 Nos
9	SPLIT PIN Ø3.2x40	3020400900	16 Nos
10	SPLIT PIN Ø10x100	3020401000	16 Nos
11	BOLT Ø40x113	3020401100	16 Nos
12	SPRING LOCK WASHER B12	3020401200	16 Nos
13	CASTLE NUT M12	3020401300	16 Nos
14	BRAKE BEAM OUTER	3020401400	4 Nos
15	TUBE 40 BORE x 1654	3020401500	4 Nos
16	PIN	3020401600	8 Nos
17	FLANGE 10x60x80	3020401700	16 Nos
18	NYLON BUSH	3020401800	16 Nos
19	BRAKE BEAM INNER	3020401900	4 Nos
20	TUBE 40BORE x 2380	3020402000	4 Nos
21	FLANGE 10x60x80	3020402100	8 Nos
22	BOLT SQ.65 x 167	3020402200	8 Nos
23	NYLON BUSH	3020402300	8 Nos
24	BRAKE BLOCK HANGER OUTER	3020402400	16 Nos
25	NYLON BUSH	3020402500	32 Nos
26	ARTICULATION PIECE COMPLETE	3020402600	8 Nos
27	ARTICULATION PIECE	3020402700	8 Nos
28	NYLON BUSH	3020402800	16 Nos
29	NYLON BUSH	3020402900	16 Nos
30	LEVER OUTER R.H	3020403000	4 Nos
31	DISTANCE TUBE	3020403100	4 Nos
32	NYLON BUSH	3020403200	8 Nos
33	BOLT FOR LEVER	3020403300	4 Nos
34	NYLON BUSH	3020403400	4 Nos
35	NYLON BUSH	3020403500	4 Nos
36	LEVER OUTER L.H	3020403600	2 Nos
37	DISTANCE TUBE	3020403700	4 Nos
38	NYLON BUSH	3020403800	8 Nos
39	BOLT FOR LEVER	3020403900	4 Nos
40	NYLON BUSH	3020404000	4 Nos
41	NYLON BUSH	3020404100	4 Nos

42	ADJUSTING PULL ROD	3020404200	16 Nos
43	NYLON BUSH	3020404300	80 Nos
44	BRAKE BLOCK ADJUSTER	3020404400	16 Nos
45	SAFETY STRAP	3020404500	8 Nos
46	BLOCK HANGER INNER	3020404600	8 Nos
47	NYLON BUSH	3020404700	32 Nos
48	LEVER INNER R.H	3020404800	4 Nos
49	FORK	3020404900	4 Nos
50	DISTANCE TUBE	3020405000	4 Nos
51	NYLON BUSH	3020405100	8 Nos
52	BOLT FOR LEVER	3020405200	4 Nos
53	NYLON BUSH	3020405300	4 Nos
54	NYLON BUSH	3020405400	8 Nos
55	LEVER INNER L.H	3020405500	4 Nos
56	FORK	3020405600	4 Nos
57	DISTANCE TUBE	3020405700	4 Nos
58	NYLON BUSH	3020405800	8 Nos
59	BOLT FOR LEVER	3020405900	4 Nos
60	NYLON BUSH	3020406000	4 Nos
61	NYLON BUSH	3020406100	8 Nos
62	BRAKE BEAM HANGER	3020406200	16 Nos
63	PIN	3020406300	16 Nos
64	PUNCHED WASHER A26	3020406400	40 Nos
65	SPLIT COTTER	3020406500	56 Nos
66	PIN	3020406600	8 Nos
67	PIN	3020406700	16 Nos
68	PIN	3020406800	8 Nos
69	WASHER	3020406900	32 Nos
70	SPLIT PIN ISO 1234-10x63-ST	3020407000	16 Nos
71	PUNCHED WASHER A18	3020407100	48 Nos
72	HEXAGON NUT -IS 1363(PART -3)/ISO 4034-M16-4	3020407200	16 Nos
73	SPLIT PIN ISO 1234 -4x22-St	3020407300	16 Nos
74	PIN	3020407400	16 Nos
75	WASHER Ø54/Ø30	3020407500	32 Nos
76	PUNCHED WASHER A30-IS:2016-STEEL	3020407600	16 Nos
77	SPLIT PIN ISO 1234-5x40-St	3020407700	16 Nos
78	PIN	3020407800	32 Nos
79	SPLIT COTTER	3020407900	32 Nos
80	MODIFIED PARKING BRAKE LEVER	3020408000	4 Nos

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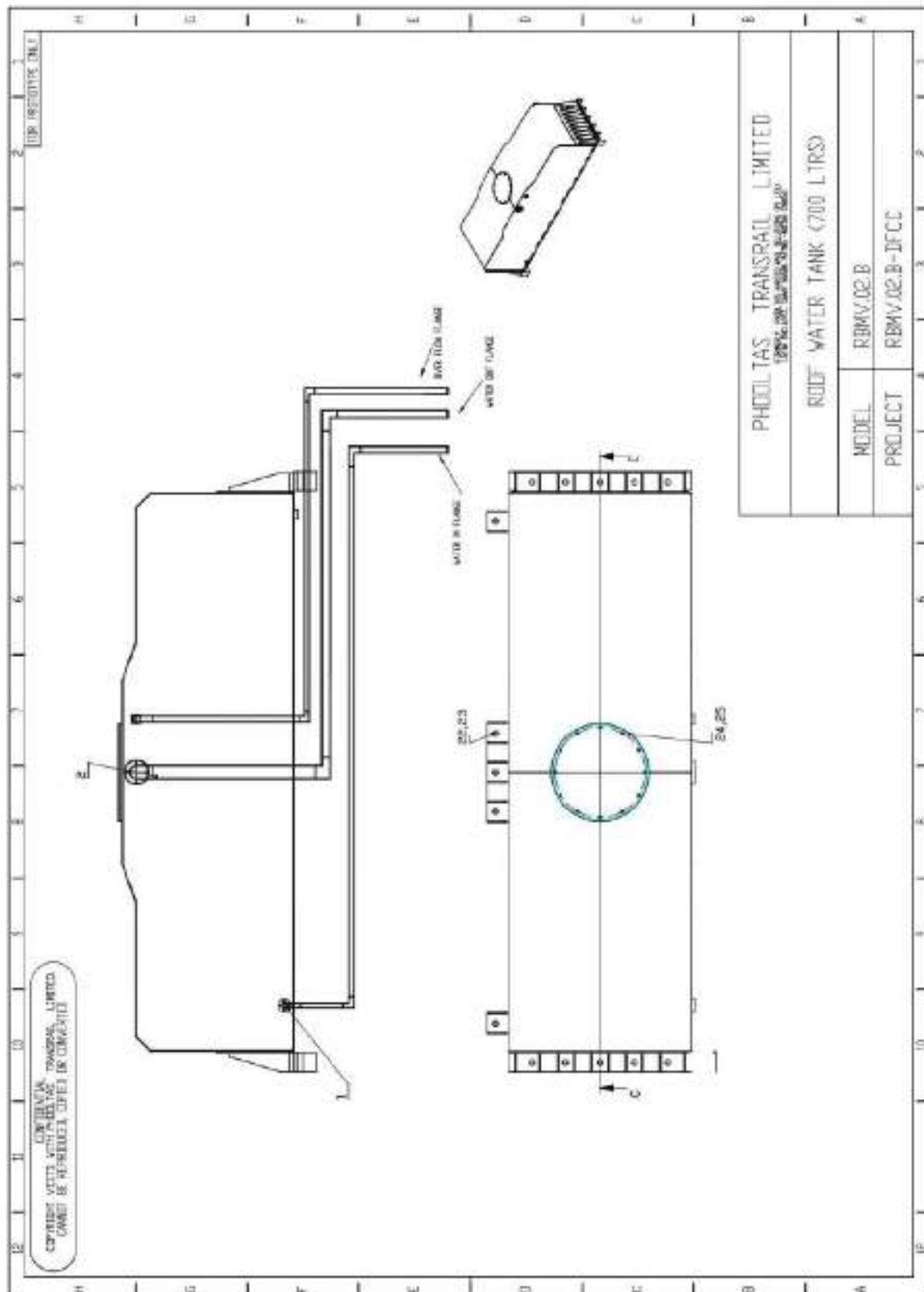
AXLE BOX GUIDE ARRANGEMENT

MODEL OHE.O1.B

PROJECT OHE.O1.B-DFOC

12). AXLE BOX GUIDE ARRGT. (3020503000)

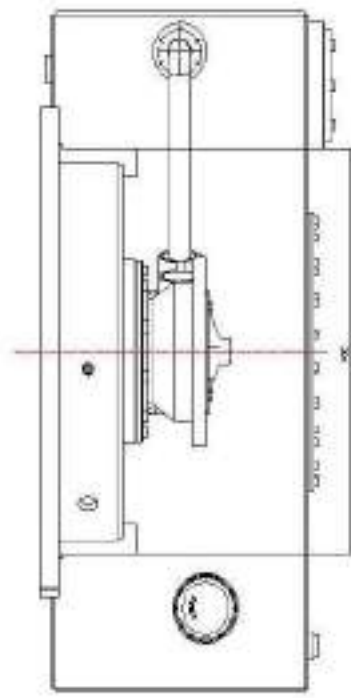
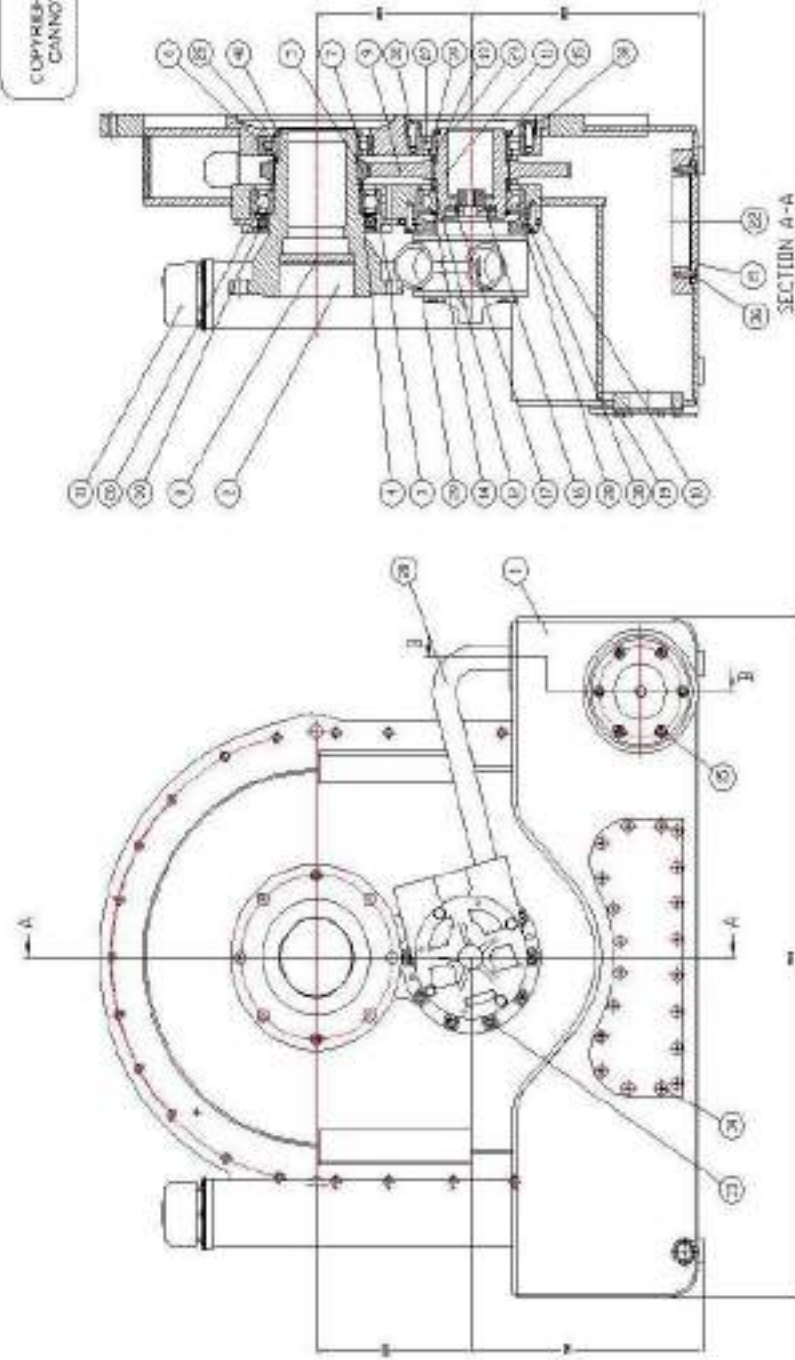
S.NO.	DESCRIPTION	PART NO.	QTY./CAR
1.	LOWER RUBBER WASHER	3020503010	16 Nos
2.	LOWER SPRING SEAT	3020503020	16 Nos
3.	PACKING RING	3020503030	08 Nos
4.	COMPENSATING RING	3020503040	08 Nos
5.	HELICAL SPRING	3020503050	08 Nos
6.	PROTECTIVE TUBE COMPLETE	3020503060	08 Nos
7.	DUST SHIELD SPRING	3020503070	08 Nos
8.	DUST SHIELD	3020503080	08 Nos
9.	GUIDE RING	3020503090	08 Nos
10.	RUBBER PACKING RING	3020503100	08 Nos
11.	GUIDE BUSH	3020503110	02 Nos
12.	CIRCLIP	3020503120	01 No
13.	SAFETY STRAP	3020503130	01 No
14.	HEX. HEAD BOLT	3020503140	01 No
15.	SPRING LOCK WASHER	3020503150	02 Nos
16.	HEX.NUT	3020503160	16 Nos
17.	WASHER	3020503170	16 Nos
18.	HEX. HEAD SCREW	3020503180	16 Nos
19.	STEEL WIRE	3020503190	16 Nos
20.	RUBBER SNUBBER	3020503200	16 Nos
21.	FIXING ARRGT. OF RUBBER SNUBBER	3020503210	16 Nos
22.	SPLIT PIN	3020503220	25 Nos
23.	PACKING PLATE	3020503230	04 Nos
24.	HEX. HEAD SCREW	3020503240	32 Nos
25.	HEX. NUT	3020503250	32 Nos
26.	HEX. THIN NUT	3020503260	32 Nos
27.	SPRING LOCK WASHER	3020503270	32 Nos
28.	HEX. HEAD SCREW	3020503280	32 Nos



13). ROOF WATER TANK (3020054000)

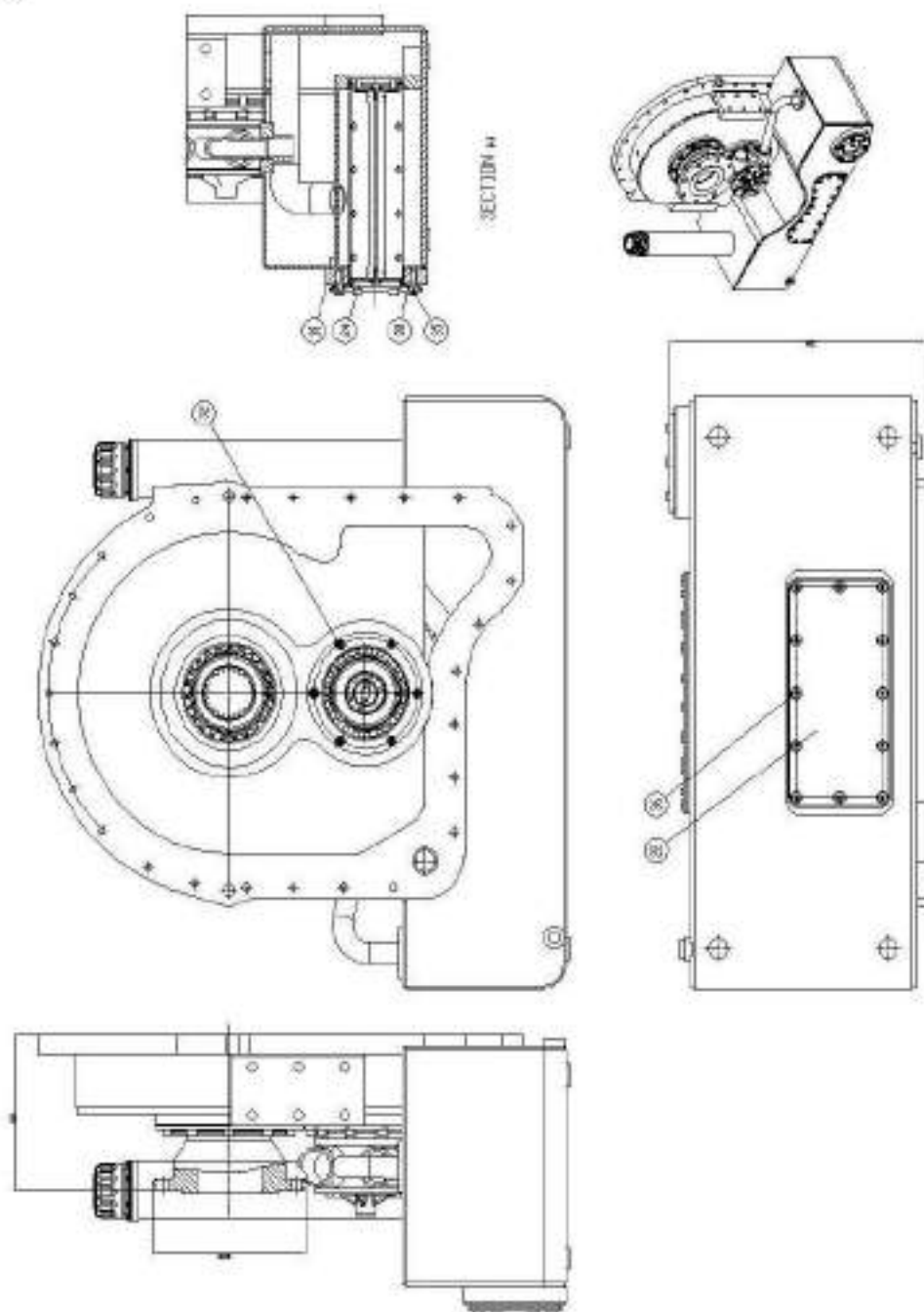
S. NO.	DESCRIPTION	PART NO.	QTY.
1	SS PIPE 1/2", THK-1MM	3020054010	20m
2	TAFLOX TAPE 1/2"	3020054020	10 Pc.
3	SS TEE 1/2" BSP(F)	3020054030	2 Nos
4	STR 1/2" - 3/4" BSP	3020054040	1 Nos
5	ALBOW 3/4" BSP	3020054050	1 Nos
6	SS TEE 3/4" BSP	3020054060	4 Nos
7	SS ELBOW 1/2" (F)	3020054070	2 Nos
8	SHOKET 3/4" BSP	3020054080	1 Nos
9	SS ELBOW 3/4" (F)	3020054090	22 Nos
10	SS PIPE 1" ,THK-1MM	3020054100	10m
11	GUN METAL NRV HORIZONTAL 1"	3020054110	2 Nos
12	SS UNION 3/4" CF8 304	3020054120	3 Nos
13	SS UNION 1" CF8 304	3020054130	2 Nos
14	SS ELBOW 1" (F)	3020054140	12 Nos
15	SS TEE 1" BSP (F)	3020054150	1 Nos
16	TAFLOX TAPE 1"	3020054160	5 Pc.
17	SS BARREL NIPPLE 1"x6"	3020054170	2 Nos
18	STR. 1" BSP	3020054180	2 Nos
19	BALL VALVE 3/4" BSP	3020054190	1 Nos
20	WHITE PLUMBER SEAL 500ML	3020054200	1 Nos
21	HEX HEAD BOLT M16x40	3020054210	15 Nos
22	HEX NUT M16x40	3020054220	15 Nos
23	HEX HEAD BOLT M8x20	3020054230	12 Nos
24	HEX NUT M8x20	3020054240	12 Nos

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PHOOLTAS TRANSRAIL LIMITED	
LAYAK ENCLAVES, SAHAY NAGAR, PATNA-801 506 (INDIA)	
INTEGRAL OIL SUMP ASSLY (FOR CRT 5633 TRANSMISSION)	
MODEL	OHE.01.B
PROJECT	OHE.01.B-DFCC

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LAYAK ENCLAVES, SAHAY NAGAR, PATNA-801505 (INDIA)

INTEGRAL OIL SUMP ASSLY (FOR CRT 6633 TRANSMISSION)

MODEL OHE.01.B

PROJECT OHE.01.B-DFCC

14). INTEGRAL OIL SUMP (3029100000)

S.NO.	DESCRIPTION	PART NO.	QTY.
1.	HOUSING INTEGRAL OIL SUMP (MACHINED)	3029100100	01 No
2.	FLANGE, OUTPUT	3029100200	01 No
3.	SEAL CARRIER	3029100300	01 No
4.	SPACER – 1, OUTER	3029100400	01 No
5.	HELICAL PINION 55 T	3029100500	01 No
6.	SPACER – 2, OUTER	3029100600	01 No
7.	SPACER – 3, OUTER	3029100700	01 No
8.	CLOSING – PLATE	3029100800	01 No
9.	HELICAL GEAR 89 T	3029100900	01 No
10.	PUMP MTG. COVER	3029101000	01 No
11.	PUMP DRIVE SHAFT	3029101100	01 No
12.	SPACER – 1, PUMP SHAFT	3029101200	01 No
13.	SPACER – 2, PUMP SHAFT	3029101300	01 No
14.	SPACER – 3, PUMP SHAFT	3029101400	01 No
15.	SPACER – 4, PUMP SHAFT	3029101500	01 No
16.	FLANGE, DRIVING PUMP	3029101600	01 No
17.	DRIVING PIN	3029101700	01 No
18.	GASKET – 1M STRAINER	3029101800	01 No
19.	COVER	3029101900	01 No
20.	BEND PIPE	3029102000	01 No
21.	GASKET, BOTTOM COVER	3029102100	01 No
22.	BOTTOM COVER	3029102200	01 No
23.	BEARING RETAINER	3029102300	01 No
24.	STRAINER AND MAGNETIC ASSLY.	3029102400	01 No
25.	CYLINDRICAL ROLLER BEARING, SKF	3029102500	01 No
26.	DEEP GROOVE BALL BEARING, SKF	3029102600	01 No
27.	CYLINDRICAL ROLLER BEARING, SKF	3029102700	01 No
28.	DEEP GROOVE BALL BEARING, SKF	3029102800	01 No
29.	AUXILIARY LUB. OIL PUMP FOR TRANSMISSION	3029102900	01 No
30.	OIL SEAL	3029103000	01 No
31.	FILLER CUM BREATHER	3029103100	01 No
32.	SOCKET HEAD BOLT	3029103200	06 Nos
33.	SOCKET HEAD BOLT	3029103300	20 Nos
34.	SOCKET HEAD BOLT	3029103400	20 Nos
35.	SOCKET HEAD SCREW	3029103500	06 Nos
36.	SOCKET HEAD SCREW	3029103600	12 Nos
37.	MAGNETIC DRAIN PLUG	3029103700	01 No
38.	SP. WASHER M 8	3029103800	32 Nos
39.	EXTERNAL CIRCLIP, SIZE - 90	3029103900	01 No
40.	EXTERNAL CIRCLIP, SIZE - 100	3029104000	01 No

**15). COOLING CIRCUIT OF TRANSMISSION AND RADIATOR
(HYDRAULICALLY DRIVEN) (3021100000)**

S.NO.	DESCRIPTION	PART NO.	QTY.
1.	FAN DRIVE HYDRAULIC MOTOR	3021100100	02 Nos
2.	DOUBLE (TANDEM) GEAR PUMP	3021100200	02 Nos
3.	PRESSURE RELIEF/PROTECTION VALVE	3021100300	02 Nos
4.	RETURN FILTER ASSLY. PORT-1-1/2"	3021100400	01 No
5.	OIL COOLER 1-1/4" BSPT PORT	3021100500	01 No
6.	IN LINE CHECK VALVE (BY PASS)	3021100600	01 No
7.	OIL LEVEL CUM TEMP. GAUGE	3021100700	01 No
8.	FILLER CUM BREATHER	3021100800	01 No
9.	HYDRAULIC OIL FLOAT SWITCH	3021100900	01 No
10.	SUCTION STRAINER	3021101000	02 Nos
11.	SUCTION STRAINER	3021101100	02 Nos
12.	GM BALL VALVE	3021101200	02 Nos
13.	GM BALL VALVE	3021101300	02 Nos
14.	DRAIN PLUG	3021101400	01 No
15.	HYDRAULIC TANK ASSLY.	3021101500	01 No
16.	PRESSURE GAUGE	3021101600	02 Nos
17.	COOLANT RISING PUMP	3021101700	01 No
18.	RADIATOR ASSLY.	3021101800	01 No
19.	T.C. OIL COOLER FOR TWIN POWER PACK	3021101900	02 Nos
20.	COOLANT FILLING TANK	3021102000	01 No

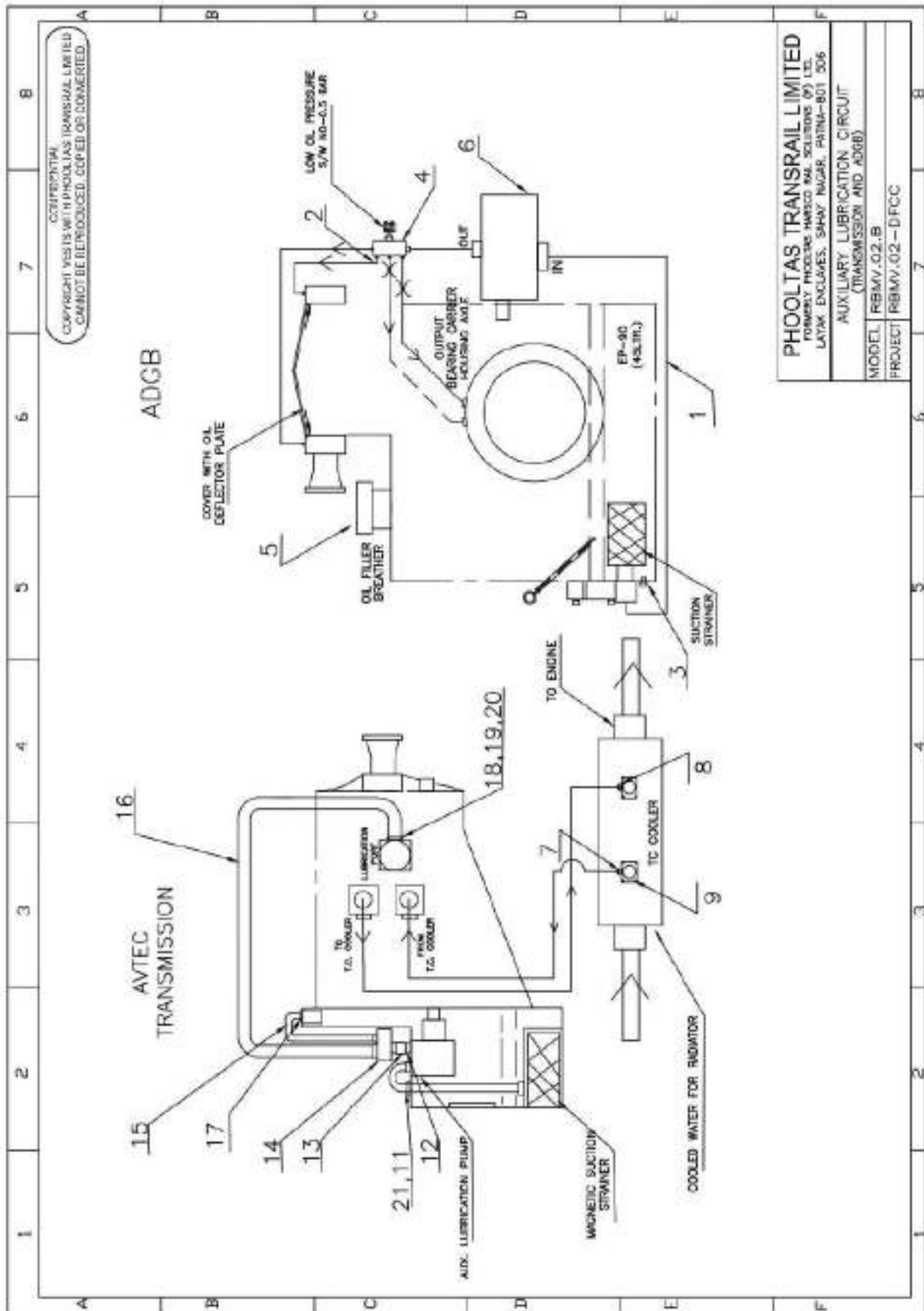
16.) HYDRAULIC CIRCUIT WITH COMPONENTS (3020900000)

S.NO.	DESCRIPTION	PARTS NO.	QTY.
1.	HYDRAULIC TANK 400 LTRS.	3020900100	01 No.
2.	EMERGENCY GEAR PUMP	3020900200	01 No.
3.	HYDEX GEAR COUPLING	3020900300	01 No.
4.	EMERGENCY PUMP DRIVE ELECTRICAL MOTOR 3HP	3020900400	01 No.
5.	IN LINE CHECK VALVE 5 PSI ½"	3020900500	01 Nos.
6.	SUB PLATE 06 SIZE SERIES 1"PORT	3020900600	01 No.
7.	3 POSITION DIRECTION CONTROL VALVE	3020900700	01 Nos.
8.	EXT. ELC. POWER DRIVEN AC COMPRESSOR (DEPORT USE)	3020900800	01 No.
9.	2 POSITION VALVE (PUMP POWER SELECTION)	3020900900	04 Nos.
10.	SUB PLATE 03 SERIES	3020901000	04 Nos.
11.	IN LINE CHECK VALVE (BYPASS) 3 BAR, 1" PORT	3020901100	02 Nos.
12.	OIL COOLER 1-1/2",110/24VDC FAN DIA 400, MODEL-AH-1680, 26.5 KW,FLOW 300 LPM	3020901200	01 No.
13.	IN LINE CHECK VALVE 5 PSI 3/4"	3020901300	04 Nos.
14.	DIRT INDICATOR GAUGE 1/8"	3020901400	01 Nos.
15.	PRESSURE GAUGE 0 TO 400 KG/CM.SQ.	3020901500	03 Nos.
16.	GAUGE CONNECTOR	3020901600	03 Nos.
17.	QUICK CONNECT COUPLING 1/2"	3020901700	02 No.
18.	3/4" SUB PLATE FOR 2 POSITION DIRECTION VALVE	3020901800	02 Nos.
19.	BALL VALVE (LOW PRESSURE) 3/4"	3020901900	01 Nos.
20.	SINGLE GEAR PUMP FOR RADIATOR FAN DRIVE MOTOR	3020902000	02 Nos.
21.	FAN DRIVE HYDRAULIC MOTOR	3020902100	02 Nos.
22.	RADIO REMOTE CONTROL FOR 4 SECTION MANUAL VALVE CRANE MEC HL RADIO REMOTE CONTROL SYSTEM	3020902200	02 No.
23.	BALL VALVE (LOW PRESSURE) 1-1/2"	3020902300	03 Nos.
24.	PRESSURE RELIEF VALVE	3020902400	01 No.
25.	BEND AXIS FIXED DISP. PISTON PUMP FOR CRANE AND PLATFORM REXROTH 32 CC-A17FO032/10NLWKOE81-0	3020902500	02 Nos.
26.	SUCTION STRAINER 1-1/2" PORT 150 MICRONS	3020902600	05 Nos.
27.	HIGH TEMP. SAFETY SWITCH 85°C	3020902700	01 No.
28.	LEVEL GAUGE WITH TEMP. INDICATOR	3020902800	01 No.
29.	FILLER BREATHER	3020902900	01 No.
30.	RETURN FILTER ASSLY. 1-1/2" PORT 10MICRON FILTER FLOW 200LPM	3020903000	01 Nos.
31.	LOW OIL SAFETY SWITCH	3020903100	01 No.
32.	PILOT OPERATOR CHECK VALVE	3020903200	04 Nos.
33.	STABILIZER CYLINDER	3020903300	04 No.
34.	3 POSITION STABILISER CONTROL VALVE	3020903400	02 No.
35.	HIGH PRESSURE SHUT OFF COCK 1/2"	3020903500	04 No.
36.	2 POSITION MANUAL DIRECTION CONTROL VALVE 03 SERIES	3020903600	02 No.
37.	OIL COOLER 1-1/2",110/24VDC FAN DIA 350	3020903700	01 No.

17). PENUMATIC CIRCUIT WITH COMPONENTS (3020800000)

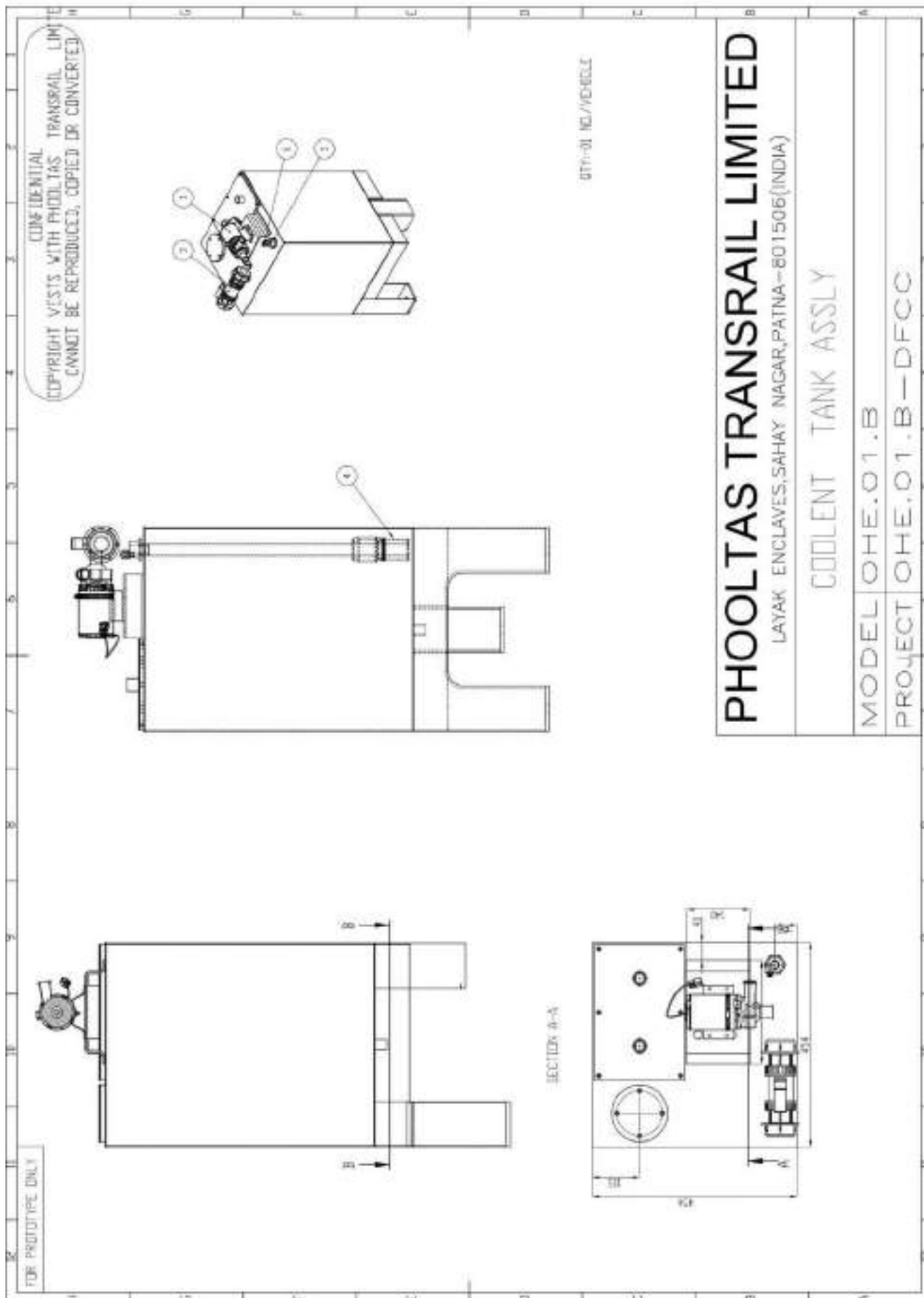
S. NO.	DESCRIPTION	PART NO.	QTY.
A1	UNLOADER VALVE	3020800000	01 No.
A2	1" CHECK VALVE	3020800000	05 Nos.
A3	SAFETY VALVE TYPE J-1 SET AT 8.5 Kg/cm ² .	3020800000	01 No.
A4	M.R-I AND MR-II RESERVOIR (150 Ltrs EACH)	3020800000	02 No.
A5	Auto drain valve with timing reservoir type D-1	3020800000	03 No.
A6	½" Drain cock	3020800000	03 Nos.
A7	J- Air filter with drain cock	3020800000	01 No.
A8	PRESSURE SWITCH RT-116 SET TO CLOSE AT 8Kg/cm ² OPEN AT 7Kg/cm ²	3020800000	01 No.
A9	3/8" ISO cock with vent	3020800000	08 Nos.
A10	3-WAY MAGNET VALVE 24V D.C.NORMALLY CLOSED	3020800000	01 No.
A11	1" ISOLATING COCK WITH OUT VENT,P/MTD.	3020800000	01 Nos.
A12	A-9 Auto brake valve	3020800000	02 Nos.
A13	½" ISO cock	3020800000	05 Nos.
A14	4" Duplex press gauge (BP)	3020800000	02 Nos.
A15	4" Duplex press gauge (MR)	3020800000	02 Nos.
A16	C3W DIST. VALVE WITH SUPPORT/CONTROL RESERVOIR AND FILTER, P/MOUNTED	3020800000	01 No.
A17	M.R-III, RESERVOIR 100 Ltrs	3020800000	01 No.
A18	N1-REDUCING VALVE SET AT 5 kg/cm ² .	3020800000	03 Nos.
A19	N1-REDUCING VALVE SET AT 2 kg/cm ² ,P/MTD.	3020800000	02 No.
A20	1/4" BSP 2 WAY HEAVY DUTY DIRECT ACTING SOLENOID VALVE FOR HORN 24V DC 2S025-08	3020800000	02 Nos.
A21	PNEUMATIC HORN(DOUBLE TONE)	3020800000	02 Nos.
A22	2 Way Dirt collector	3020800000	01 No.
A23	ANGLE COCK (BP)(AS PER RDSO DRG. NO. WD-88123/S-02)	3020800000	02 Nos.
A24	HOSE WITH DUMMY COUPLING (BP)	3020800000	02 Nos.
A25	SPRING BRAKE ACTUATOR (PARKING BRAKE)	3020800000	08 Nos.
A26	GRADUATED HAND CONTROL VALVE (FOR PARKING BRAKE)	3020800000	02 Nos.
A27	24 A DOUBLE CHECK. VALVE, P/MOUNTED	3020800000	01 Nos.
A28	AIR DRYER-OF RDSO APPROVED	3020800000	01 No.
A29	V.C.D control assly. 24 V DC	3020800000	01 No.
A30	PRESSURE SWITCH (VCD SIGNAL), 3Kg/cm ² to 4Kg/cm ²	3020800000	02 Nos.
A31	RESURVOIR 10 LTR	3020800000	02 Nos.
A32	4" PARKING BRAKE INDICATOR GAUGE	3020800000	02 Nos.
A33	SA-9 BRAKE VALVE SET AT 2 kg/cm ²	3020800000	02 Nos.
A34	EAB/D-1 EMERGENCY BRAKE VALVE	3020800000	02 Nos.
A35	8" BRAKE CYLINDER,JSL TYPE,WITH TRUNION	3020800000	08 Nos.
A36	PRESSURE PROTECTION VALVE	3020800000	02 Nos.
A37	RESERVOIR-2 LTRS.(B.P.EQUALISE)	3020800000	01 No.
A38	C-2W RELAY VALVE (B.C.), P/MOUNTED	3020800000	01 No.
A39	1" ISOLATING COCK WITHOUT VENT,P/MTD.	3020800000	01 No.

A40	3/8" ISO COCK WITHOUT VENT	3020800000	01 No.
A41	SINGLE ACTING SPRING RETURN CYL. (TRANS. POWER CUT OFF CYL. (1 kg/cm ²)	3020800000	01 Nos.
A42	1" CDC WITH 7L RESERV WITH DRAIN COCK	3020800000	01 No.
A43	C-2W RELAY VALVE (B.P.), P/MOUNTED	3020800000	01 No.
A44	PRESSURE SWITCH/W RT-200 POWER CUT OFF (0.5kg/cm ² /1 kg/cm ²)	3020800000	01 No.
A45	MECHANICAL QUICK RELEASE MECHANISUM	3020800000	04 Nos.



18). TRANSMISSION AUXILIARY LUBRICATION CIRCUIT (3021101000)

S. NO.	DESCRIPTION	PARTS NO.	QTY.
1.	HOSE PIPE 3/4"x M30	3021101010	1 NO.
2.	HOSE PIPE R1 1/4" WITH CRIMPED FITTING	3021101020	5 NOS
3.	HEX HEAD BOLT M12x75	3021101030	4 NOS
4.	MAINFOLD 1/2"	3021101040	1 NO.
5.	OIL FILLER BREATHER	3021101050	1 NO.
6.	BI-DIRECTIONAL PUMP WITH OIL SEAL	3021101060	1 NO.
7.	1" X 3" STR.	3021101070	1 NO.
8.	1" x1" STR	3021101080	1 NO.
9.	HEX HEAD BOLT M16X45	3021101090	8 NOS
10.	STR. 1/2" x M36	3021101100	1 NO.
11.	SS PIPE 1" THK.-1MM	3021101110	0.6M
12.	STR. 1-1/2"x3/4"	3021101120	1 NO.
13.	STR. 3/4"-1/2"	3021101130	1 NO.
14.	TEE 1/2" WITH SLOT NUT 1/2" RUN 1/2" BSP	3021101140	1 NO.
15.	HOSE PIPE 1/2" LONG 550MM	3021101150	1 NO.
16.	HOSE PIPE 1/2" LONG 1450	3021101160	1 NO.
17.	STR 3/4" -1/2"	3021101170	1 NO.
18.	STR 1/4"-1/2"	3021101180	1 NO.
19.	CHECK VALVE 1/2"	3021101190	1 NO.
20.	STR 1/2"-1/2"	3021101200	1 NO.
21.	HEX NUT M6x20	3021101210	1 NO.



19) COOLENT TANK ASSLY (3021102000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	WATER PUMP ASSLY	3021102010	1 NO.
2	COOLENT WATER TANK (100 LTR)	3021102020	1 NO.
3	BALL VALVE	3021102030	1 NO.
4	CHECK FOOT VALVE WITH STRAINER	3021102040	1 NO.
5	1 INCH M26 FITTING	3021102050	1 NO.
6	MS ELBOW BSP 1/2" XM22	3021102060	1 NO.



20). 24V POWER SUPPLY FOR ENGINE-I & ENGINE-II (3021001000)

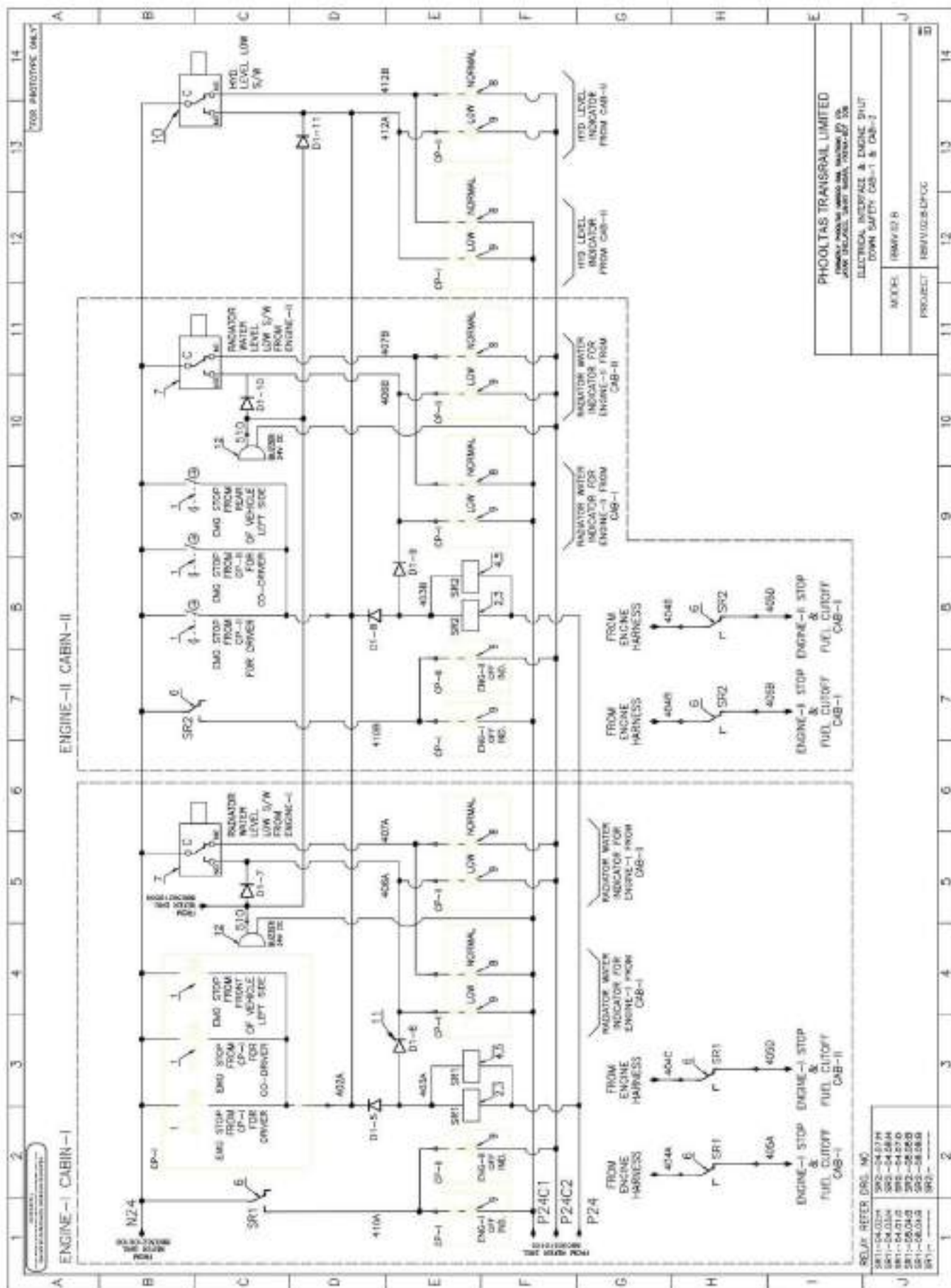
S. NO.	DESCRIPTION	PART NO.	QTY.
1	12V 150 AH BATTERY	3021001010	8 Nos
2	ALTERNATOR 24V, 100A, MAKE- LUCAS TVS	3021001020	2 Nos
3	SELF STARTER RELAY	3021001030	2 Nos
4	DIODE IN5408 (D1 TO D4)	3021001040	4 Nos
5A-5B	BATTERY CUT OFF SWITCH 100 AMP	3021001050	3 Nos
6	40A DP MCB, DC	3021001060	2 Nos
7	6A SP MCB, DC	3021001070	4 Nos
8	SOCKET 2 POLE 20 AMP. FOR BATTERY CHARGING	3021001080	4 Nos
9	3P SEL. SWITCH WITH KEY OPERATING	3021001090	1 No.
10	NO ELEMENT FOR S/W	3021001100	4 Nos
11	RELAY NO/NC CONTACT (R3)	3021001110	2 Nos
12	25A DP MCB, DC	3021001120	2 Nos
13	GREEN INDICATOR 24VOLT DC	3021001130	2 Nos
14	UNLOADER PRESSURE SWITCH	3021001140	1 No.
15	UNLOADER VALVE	3021001150	1 No.

21) ENGINE-I ECU-I CONTROL DIAGRAM (3021002000)

S. NO.	DESCRIPTION	PARTS NO.	QTY.
1	RELAY 14 PIN 6A 24V DC 4 C/O	3021002100	15 Nos
2	RELAY BASE 14 PIN	3021002200	15 Nos

22) ENGINE-II ECU-II CONTROL DIAGRAM (3021003000)

S. NO.	DESCRIPTION	PARTS NO.	QTY.
1A	RELAY 14 PIN 6A 24V DC 4 C/O	3021003100	15 Nos
2B	RELAY BASE 14 PIN	3021003200	15 Nos



**23). ELECTRICAL INTERFACE & ENGINE SHUT DOWN SAFETY CAB-1 & CAB-2
(3021004000)**

S. NO.	DESCRIPTION	PART NO.	QTY.
1	RED EMERGENCY SWITCH MUSHROOM TYPE WITH NO POINT	3021004010	12 Nos
2	4 C/O RELAY, 24V DC (SR1 & SR2)	3021004020	2 Nos
3	4 C/O RELAY BASE (SR1 & SR2)	3021004030	2 Nos
4	2 C/O RELAY, 24V DC (SR1 & SR2)	3021004040	2 Nos
5	2 C/O RELAY BASE (SR1 & SR2)	3021004050	2 Nos
6	RELAY NO/NC CONTACT (SR1 & SR2)	3021004060	6 Nos
7	RADIATOR WATER LEVEL LOW SAFETY SWITCH, MAKE-SHRIDHAN	3021004070	2 Nos
8	GREEN INDICATOR 24VOLT DC	3021004080	6 Nos
9	RED INDICATOR 24VOLT DC	3021004090	10 Nos
10	HYDRAULIC LEVEL LOW SWITCH (HYD CKT)	3021004100	1 No.
11	DIODE IN5408 (D5 TO D8)	3021004110	4 Nos
12	BUZZER 24VOLT V DC	3021004120	2 Nos



24). ELECTRICAL CIRCUIT ENGINE & TRANSMISSION SAFETY CONTROL (3021005000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	4 C/O RELAY, 24V DC (TSR1)	3021005010	1 No.
2	4 C/O RELAY BASE (TSR1)	3021005020	1 No.
3	2 C/O RELAY, 24V DC (TSR1)	3021005030	1 No.
4	2 C/O RELAY BASE (TSR1)	3021005040	1 No.
5	RELAY NO/NC CONTACT (TSR1)	3021005050	4 Nos
6	TRANSMISSION OIL TEMP. HIGH	3021005060	2 Nos
7	HYD TEMP. HIGH SWITCH	3021005070	1 No.
8	INDICATOR 24VOLT DC GREEN	3021005080	6 Nos
9	INDICATOR 24VOLT DC RED	3021005090	6 Nos
10	DIODE IN5408 (D9 TO D11)	3021005100	3 Nos
11	B.C. PRESSURE SWITCH	3021005110	1 No.
12	4 C/O RELAY, 24V DC (BCR1)	3021005120	1 No.
13	4 C/O RELAY BASE (BCR1)	3021005130	1 No.
14	RELAY NO/NC CONTACT (TSR1)	3021005140	4 Nos
15	B.P. PRESSURE SWITCH	3021005150	1 No.

**25). DRIVE SELECTION CIRCUIT IN BOTH CABIN (ENGINE-I & ENGINE –II)
(3021006000)**

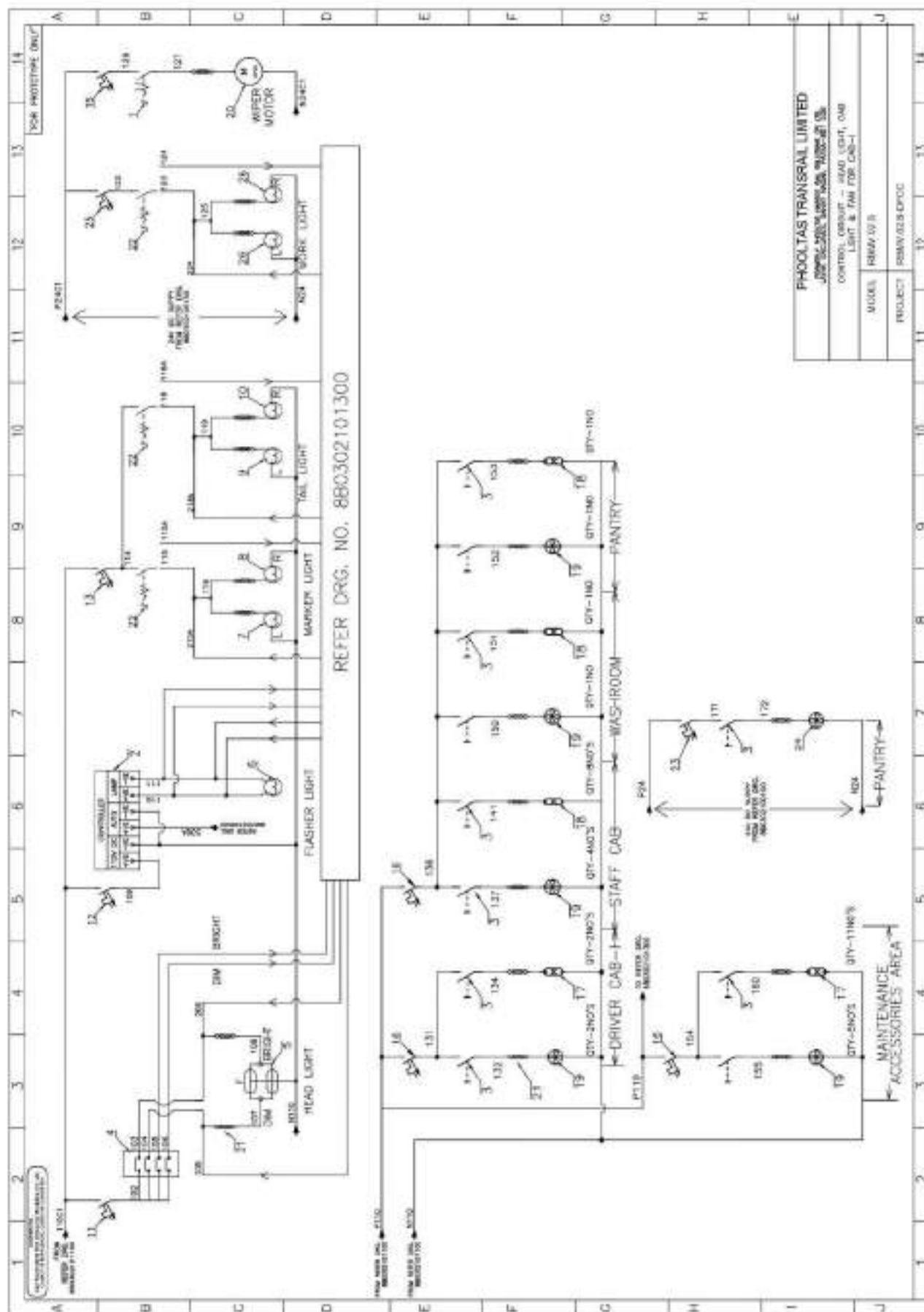
S. NO.	DESCRIPTION	PARTS NO.	QTY.
1	SINGLE SOLENOID VALVE 110V DC FOR FWD DIRECTION CONTROL	3021006010	2 Nos
2	SINGLE SOLENOID VALVE 110V DC FOR REV DIRECTION CONTROL	3021006020	2 Nos
3	OFF DELAY TIMER 1 C/O, (T1) COIL 24V DC	3021006030	1 No.
4	TIMER (T1) NO/NC CONTACT	3021006040	2 Nos
5	DIODE IN5408 (D12 TO D21)	3021006050	10 Nos
6	16A ROTARY SWITCH SINGLE POLE, 4 WAY, 61050 FOR DIRECTION FWD/REV	3021006060	2 Nos
7	8 PIN, 2 CHANGE OVER RELAY (R1,R5,R6,R9) 110V DC	3021006070	4 Nos
8	8 PIN 2 CHANGE OVER RELAY BASE (R1,R5,R6,R9)	3021006080	4 Nos
9	RELAY NO/NC CONTACT (R1,R5,R6,R9) FOR 2 CHANGE OVER RELAY	3021006090	8 Nos
10	5 PIN, 1 CHANGE OVER RELAY (R2,R4,R7,R8) 110V DC	3021006100	4 Nos
11	5 PIN 2 CHANGE OVER RELAY BASE (R2,R4,R7,R8)	3021006110	4 Nos
12	RELAY NO/NC CONTACT (R2,R4,R7,R8) FOR 1 CHANGE OVER RELAY	3021006120	4 Nos.
13	14PIN, 4 CHANGE OVER RELAY (R3) 110V DC	3021006130	2 Nos
14	14PIN, 4 CHANGE OVER RELAY BASE (R3)	3021006140	2 Nos
15	RELAY NO/NC CONTACT (R3) FOR 4 CHANGE OVER RELAY	3021006150	4 Nos
16	GREEN INDICATOR 110V DC FOR FORWARD DIRECTION	3021006160	2 Nos
17	YELLOW INDICATOR 110V DC FOR NEUTRAL DIRECTION	3021006170	2 Nos
18	BLUE INDICATOR 110V DC FOR REVERSE DIRECTION	3021006180	2 Nos
19a	5 PIN, 1 CHANGE OVER RELAY (TR2) 110V DC	3021006190	1 No.
19b	5 PIN, 1 CHANGE OVER RELAY BASE (TR2)	3021006200	1 No.
20	RELAY NO/NC CONTACT (TR2) FOR 2 CHANGE OVER RELAY	3021006210	1 No.
21	RELAY NO/NC CONTACT (TSR1,SR1,SR2,CR1)	3021006010	8 Nos

**26). DRIVER CIRCUIT FOR MANUAL & AUTO CONTROL
(CABIN-I & CABIN-II) (3021007000)**

S. NO.	DESCRIPTION	PART NO.	QTY.
1	SINGLE SOLENOID VALVE 24V DC FOR SPEED SELECTION (BOTH TRANS.)	3021007010	4 Nos
2	AUTO/MANUAL 3P SELECTOR SWITCH	3021007020	2 Nos
3	16A ROTARY SWITCH, 2P3W, GEAR SEL., 61080	3021007030	2 Nos
4	5 PIN,1C/O RELAY COIL(R12,R13,R14,R15)110V	3021007040	4 Nos
5	5 PIN,1C/O RELAY BASE(R12,R13,R14,R15)	3021007050	4 Nos
6	RELAY NO/NC CONTACT (R12,R13,R14,R15) FOR 1 CHANGE OVER RELAY	3021007060	4 Nos
7	GREEN INDICATOR 110V DC FOR SPEED-1	3021007070	2 Nos
8	YELLOW INDICATOR 110V DC FOR SPEED-2	3021007080	4 Nos
9	BLUE INDICATOR 110V DC FOR SPEED-3	3021007090	4 Nos
10	3 C/O RELAY COIL (R10) 110V DC	3021007100	1 No.
11	3 C/O RELAY BASE(R10)	3021007110	1 No.
12	RELAY NO/NC CONTACT (R10)	3021007120	3 Nos
13	DIODE IN5408 (D22 TO D38)	3021007130	17 Nos
14	ON/OFF 2P SELECTOR SWITCH NO ELEMENT FOR S/W	3021007140	8 Nos
15	2 C/O RELAY COIL (R8) 110V DC	3021007150	1 No.
16	2 C/O RELAY BASE(R8)	3021007160	1 No.
17	RELAY NO/NC CONTACT (R8)	3021007170	2 Nos
18	RED INDICATOR 24VOLT DC	3021007180	2 Nos
19	SOLENOID VALVE 24V DC	3021007190	1 No.

27). 110V DC ELECTRICAL CIRCUIT (3021008000)

S.NO.	DESCRIPTION	PART NO.	QTY.
1	AUXILLIARY ALTERNATOR 4.5 KW,110V	3021008010	2 Nos.
2	RECTIFIER REGULATOR PANEL	3021008020	2 Nos.
3	BATTERY110V X 120 AH	3021008030	1 No.
4	SOCKET 2 POLE 20 AMP. FOR BATTERY CHARGING	3021008040	2 Nos.
5	SOCKET 2 POLE 20 AMP. FOR HAND SIGNALS	3021008050	4 Nos.
6	BATTERY CUT OFF SWITCH100AMP	3021008060	1 No.
7	3 POS. SEL. S/W WITH KEY OPERATE	3021008070	1 No.
8	NO ELEMENT FOR S/W	3021008080	2 Nos.
9	NO ELEMENT FOR S/W	3021008090	6 Nos.
10	AIR DRYER PURGE VALVE	3021008100	1 No.
11	40A DP MCB, DC	3021008110	1 No.
12	25A DIODE, MODEL NO-25HM160 M8 WL, MAKE RUTTONSHA	3021008120	4 Nos.



28) CONTROL CIRCUIT – HEAD LIGHT, CABIN LIGHT & FAN FOR CAB-I (3021009000)

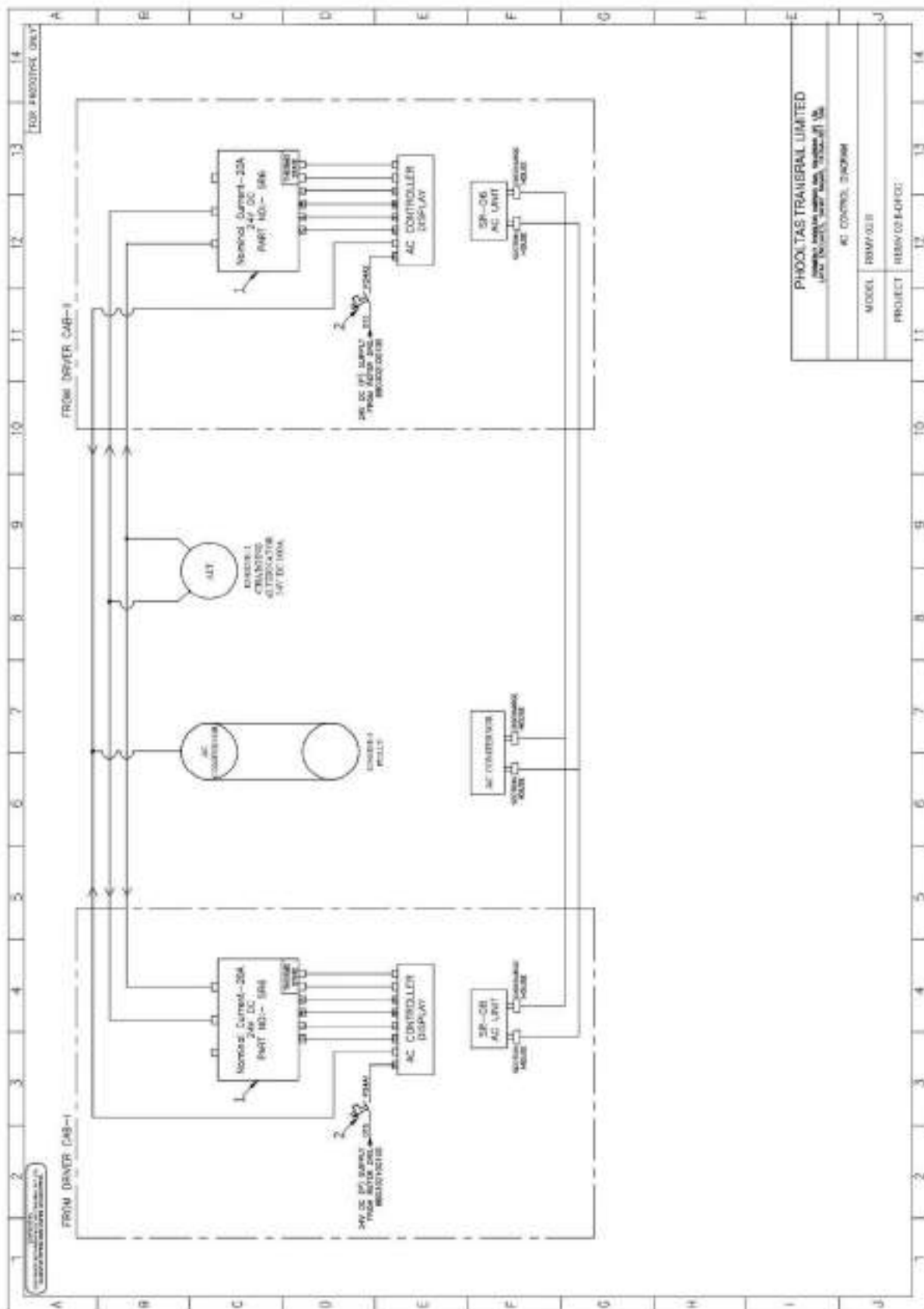
S. NO.	DESCRIPTION	PART NO.	QTY.
1	ON/OFF 2P SELECTOR SWITCH	3021009010	1 No.
2	FLASHER LIGHT CONTROL UNIT	3021009020	1 No.
3	ONE WAY SWITCH, COLOR-WHITE	3021009030	40 Nos
4	ROTARY SWITCH 1P 5W-HEAD LIGHT	3021009040	1 No.
5	HEAD LIGHT 110V DC	3021009050	1 No.
6	FLASHER LIGHT 110V DC	3021009060	1 No.
7	MARKER LIGHT LEFT 110V DC	3021009070	1 No.
8	MARKER LIGHT RIGHT 110V DC	3021009080	1 No.
9	TAIL LIGHT LEFT 110V DC	3021009090	1 No.
10	TAIL LIGHT RIGHT 110V DC	3021009100	1 No.
11	MCB 6A SP FOR HEAD LIGHT	3021009110	1 No.
12	MCB 6A SP FOR FLASHER LIGHT	3021009120	1 No.
13	MCB 6A SP FOR MAR.&TAIL LIGHT	3021009130	1 No.
14	MCB 16A SP FOR WIPER MOTOR	3021009140	1 No.
15	MCB 6AMP FOR LIGHT & FAN	3021009150	3 Nos
16	DRIVER CAB LIGHT 110V, 18W	3021009160	2 Nos
17	DRIVER CAB LIGHT 110V, 9W	3021009170	21 Nos
18	FAN 110V DC	3021009180	13 Nos
19	WIPER 24V DC	3021009190	1 No.
20	GLASS FUSE	3021009200	46 Nos
21	ON/OFF/ON 3P SWITCH	3021009210	2 Nos
22	MCB 6A SP FOR EXHAUST FAN	3021009220	1 No.
23	8" FAN EXHAUST 24V DC	3021009230	1 No.
24	MCB 6A SP FOR WORK LIGHT	3021009240	1 No.
25	WORK LIGHT RIGHT 24V DC	3021009250	2 Nos

**29). CONTROL CIRCUIT – HEAD LIGHT, CABIN LIGHT & FAN FOR CAB-II
(3021010000)**

S. NO.	DESCRIPTION	PART NO.	QTY.
1	ON/OFF 2P SELECTOR SWITCH	3021010100	1 No.
2	FLASHER LIGHT CONTROL UNIT	3021010200	1 No.
3	ONE WAY SWITCH, COLOR-WHITE	3021010300	17 No.
4	ROTARY SWITCH 1P 5W FOR HEAD LIGHT	3021010400	1 No.
5	HEAD LIGHT 110V DC	3021010500	1 No.
6	FLASHER LIGHT 110V DC	3021010600	1 No.
7	MARKER LIGHT LEFT 110V DC	3021010700	1 No.
8	MARKER LIGHT RIGHT 110V DC	3021010800	1 No.
9	TAIL LIGHT LEFT 110V DC	3021010900	1 No.
10	TAIL LIGHT RIGHT 110V DC	3021011000	1 No.
11	MCB 6A SP FOR HEAD LIGHT	3021011100	1 No.
12	MCB 6A SP FOR FLASHER LIGHT	3021011200	1 No.
13	MCB 6A SP FOR MAR.&TAIL LIGHT	3021011300	1 No.
14	MCB 16A SP FOR WIPER MOTOR	3021011400	1 No.
15	MCB 6AMP FOR LIGHT & FAN	3021011500	1 No.
16	DRIVER CAB LIGHT 110V, 18W	3021011600	2 Nos
17	FAN 110V DC	3021011700	2 Nos
18	WIPER 24V DC	3021011800	1 No.
19	GLASS FUSE	3021011900	15 Nos
20	ON/OFF/ON 3P SWITCH	3021012000	2 Nos
21	MCB 16A SP FOR WATER MOTOR	3021012100	1 No.
22	0.23KW 24V DC MOTOR	3021012200	1 No.
23	MCB 16A SP FOR HYD OIL COOLER FAN	3021012300	1 No.
24	TEMPERATURE SWITCH VARUAVKE TYPE (25°C 90°C)	3021012400	2 Nos
25	HYD OIL COOLER FAN	3021012500	2 Nos
26	DUAL USB CHARGER	3021012600	4 Nos
27	TWIN SOCKET	3021012700	14 Nos

30). ELECTRO PNEUMATIC CKT OF VCD INTERFACE CONTROL (3021011000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	VCD CONTROL UNIT	3021011100	1 No.
2	VCD RESET UNIT	3021011200	2 Nos
3	HORN SOLENOID VALVE	3021011300	2 Nos
4	HORN PRESSURE SWITCH	3021011400	2 Nos
5	B.C PRESSURE SWITCH	3021011500	2 Nos
6	HORN PUSH BUTTON SWITCH YELLOW NO	3021011600	8 Nos
7	ELECTRO PNEUMATIC SOLENOID VALVE	3021011700	1 No.





21). AC CONTROL DIAGRAM-I (3021012000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	40A AC, 24V DC, PART NO- ST-10SC	3021012100	4 No.
2	6A SP MCB, DC	3021012200	4 No.



32). AC CONTROL DIAGRAM-II (3021013000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	40A AC, 24V DC, PART NO- ST-10SC	3021013100	1 No.
2	THREE PHASE MOTOR & ALTERNATOR	3021013200	1 No.
3	32A TP MCB, AC	3021013300	1 No.
4	6A SP MCB, DC	3021013400	1 No.
5	5 PINS PANEL MOUNTING SOCKET 30A 415V	3021013500	2 Nos

33). ELECTRO PNEUMATIC CONTROL CIRCUIT OF PARKING BRAKE (3021014000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	6A SP MCB	3021014100	2 Nos
2	PARKING BRAKE APPLICATION RED PUSH BUTTON SWITCH	3021014200	2 Nos
3	PARKING BRAKE RELEASE GREEN PUSH BUTTON SWITCH	3021014300	2 Nos
4	PARKING APPLICATION RED INDICATOR 110V DC	3021014400	2 Nos
5	PARKING RELEASE GREEN INDICATOR 110V DC	3021014500	2 Nos
6	DIODE IN5408 (D39 TO D42)	3021014600	4 Nos
7	PARKING PRESSURE SWITCH	3021014700	1 No.
8	SELECTOR VALVE 110V DC	3021014800	1 No.



34). COMMUNICATION SYSTEM (3021015000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	AMPLIFIER	3021015100	1 No.
2	MICROPHONE	3021015200	2 Nos
3	WALL SPEAKER, 300TM	3021015300	4 Nos
4	YELLOW PUSH BUTTON SWITCH WITH NO ELEMENT	3021015400	4 Nos
5	MCB 16A SP	3021015500	1 No.
6	WALL MOUNTED, OUTDOOR SPEAKER	3021015600	2 Nos

35). PANTRY EQUIPMENT DIAGRAM (3021016000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	WATER DISPENSARY, 230V AC 500W	3021016010	1 No.
2	MICROWAVE 230V AC, 1150W	3021016020	1 No.
3	KETTLE, 230V AC, 1500W	3021016030	1 No.
4	REFRIGERATOR, 230V AC, 65W	3021016040	1 No.
5	Socket, COLOR-WHITE	3021016050	4 Nos
6	10A 1 Way Switch, COLOR-WHITE	3021016060	4 Nos
7	HONDA GENSET EU30iS	3021016070	1 No.
8	AC TO DC Converter, CAPACITY- 2.0KVA, I/P- 230VAC, O/P-110V DC & (b) 24 VDC	3021016080	1 No.
9	SOCKET 2 POLE 20 AMP.	3021016090	4 Nos
10	CHANGEOVER SWITCH 2 POLE 2 WAY, 25AMP, Make-GIC, 61026	3021016100	1 No.

36). CAMERA & MONITOR DIAGRAM (3021017000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	CAMERA	3021017100	4 Nos
2	7 INCH (WITH RECORDING) TFT MONITOR	3021017200	2 Nos
3a	ON/OFF 2P SELECTOR SWITCH	3021017300	2 Nos
3b	NO ELEMENT FOR S/W	3021017400	2 Nos

37) CONTROL CIRCUIT OF OHE DEVICE (3021018000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	OHE SENSOR	3021018100	2 Set.
	OHE CONTROL CARD		
	OHE DISPLAY		
2	OFF/ON SWITCH FOR OHE BYPASS	3021018200	4 Nos



38). CRANE CONTROL DIAGRAM (3021019000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	CRANE	3021019010	2 Nos
2	CRANE-1 ON IND. GREEN	3021019020	2 Nos
3	CRANE-2 ON IND. GREEN	3021019030	2 Nos
4	LIMIT SWITCH	3021019040	4 Nos
5	RED IND. STAB-I ON	3021019050	2 Nos
6	RED IND. STAB-II ON	3021019060	2 Nos
7	RED IND. STAB-III ON	3021019070	2 Nos
8	RED IND. STAB-IV ON	3021019080	2 Nos
9	2 C/O RELAY, 24V DC	3021019090	1 No.
10	2 C/O RELAY BASE	3021019100	1 No.
11	4 C/O RELAY, 24V DC	3021019110	1 No.
12	4 C/O RELAY BASE	3021019120	1 No.
13	DIODE IN5408 (47 TO 50)	3021019130	4 Nos
14	BY PASS SWITCH GREEN PUSH BUTTON WITH NO TYPE	3021019140	4 Nos
15	6A SP MCB, DC	3021019150	1 No.



39). GAUGE DIAGRAM FOR CAB-I (3021020000)

S. No.	DESCRIPTION	PART NO.	QTY.
1	CRANE	3021020000	2 Nos
2	CRANE-1 ON IND. GREEN	3021020000	2 Nos
3	CRANE-2 ON IND. GREEN	3021020000	2 Nos
4	LIMIT SWITCH	3021020000	4 Nos
5	RED IND. STAB-I ON	3021020000	2 Nos
6	RED IND. STAB-II ON	3021020000	2 Nos
7	RED IND. STAB-III ON	3021020000	2 Nos
8	RED IND. STAB-IV ON	3021020000	2 Nos
9	2 C/O RELAY, 24V DC	3021020000	1 No.
10	2 C/O RELAY BASE	3021020000	1 No.
11	4 C/O RELAY, 24V DC	3021020000	1 No.
12	4 C/O RELAY BASE	3021020000	1 No.
13	DIODE IN5408 (47 TO 50)	3021020000	4 Nos
14	BY PASS SWITCH GREEN PUSH BUTTON WITH NO TYPE	3021020000	4 Nos
15	6A SP MCB, DC	3021020000	1 No.

40) GAUGE DIAGRAM FOR CAB-II (3021021000)

S. NO.	DESCRIPTION	PART NO.	QTY.
1	4" PARKING BRAKE GAUGE	3021021010	1 No.
2	4" DUPLEX PRESS. GAUGE (MR-BP)	3021021020	1 No.
3	TRANSMISSION TEMPERATURE GAUGE	3021021030	2 Nos
4	TRANSMISSION TEMPERATURE SENSOR	3021021040	1 No.
5	TRANSMISSION OIL PRESSURE GAUGE	3021021050	2 Nos
6	PRESSURE SENSOR/SENDER, ES2PM-200	3021021060	1 No.
7	FUEL LEVEL GAUGE ELECTRICAL, VEETHREE 24V DC	3021021070	1 No.
8	FUEL LEVEL SENSOR, 24V DC	3021021080	1 No.
9	HYDRAULIC TEMPERATURE GAUGE	3021021090	1 No.
10	HYD TEMPERATURE SENSOR	3021021100	1 No.
11	2 C/O RELAY, 24V DC (MR1)	3021021110	1 No.
12	2 C/O RELAY BASE (MR1)	3021021120	1 No.
13	RELAY NO/NC CONTACT (MR1)	3021021130	2 Nos



PHOOLTAS TRANSRAIL LIMITED

RAIL BOUND MOBILE VEHICLE (8 - WHEELER)

MODEL : RBMV.02.B

G A U G E : 1676 mm



WORK SHOP MANUAL

REFERENCE NO. WSM/302B/3K23, REV.: -00

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 **phooltas**
 **phooltas**
 **info@phooltas.org**
 **www.phooltas.org**



B.O: Plot No.- 1A, Sector-7,IIE, SIDCUL, Haridwar, Uttarakhand-249403 (INDIA)
H.O.: Layak Enclave (East), Sahay Nagar, Phulwari Sharif, Patna Bihar-801506 (INDIA)

INTRODUCTION

PHOOLTAS make Rail Bound Mobile Vehicle with MMU equipment (Model-RBMV.02.B) is a 8 Wheeler, twin power pack, self-propelled car. RBMV is idle vehicle for rail track civil maintenance work to run on B.G schedule of DFCC network. RBMV has been provided with hydraulic knuckle boom crane (Total 2 Nos) i e, one no. each end on RBMV. RBMV and its mounted cranes are suitable to load – unload rail maintenance material at required site from loading platform and attached BFRS which are usually used for shipping at track site construction and maintenance work. RBMV is equipped with multiple maintenance units (MMU) and various other necessary tools & spares which are used in emergency and routine maintenance-inspection of track. Therefore proper maintenance of RBMV is necessary to ensure the reliability and availability in emergency and for regular maintenance work of track. This Operation and Maintenance manual of 8 Wheeler RBMV has been prepared with the objective of making operating personnel aware to correct operation and maintenance techniques adopted in field.

This vehicle has been provided with two knuckle boom crane with load lifting capacity (1 ton at 15M reach), suitable storage rack, cubical, cupboards, pigeon box for MMU tools and spares track maintenance work. Vehicle has been equipped with A.C cabins for Crew and drivers which is an ideal vehicle for RBMV work.

INDEX		
S. No.	DESCRIPTION	PAGE NO.
1	INTRODUCTION	2
2	INDEX	3
3	MAINTENANCE SCHEDULE	4
4	BRAKE AND PNEUMATIC LINE	4-5
5	HYDRAULIC POWER PACK	5-6
6	TRANSMISSION	6
7	SUSPENSION / BOGIE	6
8	AXLE DRIVE GEAR BOX (ADGB) ASSLY	6-7
9	TORQUE ARM ASSEMBLY	7
10	AXLE BOX ASSEMBLY	7
11	WHEEL ASSEMBLY	7
12	ULTRASONIC TESTING OF AXLE	7-8
13	ELECTRICAL CHECK AND MAINTENANCE	8
14	RECOMMENDED OIL AND LUBRICANTS	9
15	MAINTENANCE OF BATTERY	10
16	MAINTENANCE OF BRAKE VALVES	11-13

3. MAINTENANCE SCHEDULE

Objective: For upkeep of 8 wheelers all time availability in working conditions.

Back Ground: Rail Bound Maintenance Vehicle 8 Wheeler (RBMV.02.B) is twin power pack, self-propelled 4 axle vehicle to run on B.G schedule of DFCC network. This special maintenance instruction has been prepared to maintain 8 wheelers so that its availability can be ensured all the time.

Following maintenance instructions to be followed for various components:

MAINTENANCE OF ENGINE

EVERY 3500 to 4000 HOURS OR 1 YEARS WHICHEVER IS EARLIER.

C-Check

S. No.	Maintenance Steps
1.	Repeat all maintenance steps of check A & B
2.	Check exhaust and inlet manifold and nuts.
3.	Tighten all mounting bolts and nuts.
4.	Clean Turbocharger diffuser and impeller.
5.	Check turbocharger bearing sound and vibration for normal working.
6.	Check engine mounting pad for any crack or ageing, Replace is required.
7.	Replace filter Assembly of lub. oil fuel oil and coolant.
8.	Clean fuel tank and suction strainer.
9.	Replace engine lubrication oil, engine coolant.

4. BRAKE AND PNEUMATIC LINE

Six Month check (Include all Monthly check schedule along with Six month schedule.)

- Check brake block thickness, replace and adjust brake clearance as required.
- Check pressure switch and all pneumatic safety switches for proper functioning adjust if required.
- Check gauges and indicator for proper functioning.

Yearly check (Include all Six month check schedule along with Yearly schedule.)

- Check rubber packing any leakage on panel brake, replace packing if required.
- Check all components on brake panel for proper functioning and no leakages from them.
- Check any damages of flexible hose / pipe for any external crack or damages, replace them.

Three Year / check (Include Yearly check schedule along with Three Year schedule.)

- Overhaul the safety switch.
- Clean the chokes, exhaust plugs, mesh filters in the distributor valves on panel brake control valve and check proper functioning of all sub-assemblies.
- Overhaul the drivers brake valve (SA9,A9). Replace all the rubber items and clean filters.
- Check for proper functioning of relay valves and replace the damaged / worn out components / valve Assembly
- Replace rubber / sealing washer of air brake hose end (B.P line) coupling.
- Check all the hose assemblies of brake system for damage or over ageing, replace if required.

3-1/2 to 4 Year I.O.H.

- Replace all the rubber items and choke in the brake system equipment's like safety valves, Auto Drain Valves Drivers Brake valve, Relay valve Tread brake Block units, Isolating cocks, Dust collectors, Angle cocks, filters etc.
- Check the Distributor Valve sub-assemblies and entire assembly for proper functioning, replace rubber items, chokes and springs only if required.
- Entire distributor valve does not need overhauling for 6 years.
- Replace all hose assemblies if not done so far.

Six Year P.O.H.

- Repair and maintenance of brake system including overhauling of Distributor valve.
- Brake Testing.

5. HYDRAULIC POWER PACK

(For radiator fan, creep traction, crane and elevating platform and A.C drive)

Six Month check (Include all Monthly check schedule along with Six month schedule.)

- Remove drain plug and drain hydraulic reservoir.
- Remove suction strainer and clean before refitting in reservoir.
- Though clean of hydraulic bottom dirt of reservoir inside before putting new oil.
- Replace new filter elements for proper hydraulic equipment working.
- Check leakage from fitting and tighten, if still leakage observe then replace fitting.

Yearly check (Include all Six month check schedule along with Yearly schedule.)

- Check pump and motor drive coupling for proper condition, replace if worn out or abnormal.
- Check control solenoid valve for proper function if sticky then remove and clean by air blowing, if still malfunctioning replace then.
- Check and reset pressure for normal operating range as per manual.
- Check for damage hose pipes, joints leakage, replace as required.

Three Year P.O.H. / check (Include Yearly check schedule along with Three Year schedule.)

- Externally clean all hydraulic components before removing from equipment.
- Check cylinder seal and cylinder condition, if required replace cylinder unit.
- Replace crack / damages and ageing pressure hoses if required.
- Replace suction strainer and filter element.
- Check electro hydraulic valve for any malfunctioning, replace them if earlier it has been not replace.
- Check pump and motors for proper working capacity pressure, shaft seal and drive shaft condition, if abnormal or wear out send them for reconditioning.

6. TRANSMISSION

Six Month check (Include all Three Monthly check schedule along with Six month schedule.)

- Check main transmission oil pressure for proper range.
- Check electro pneumatic valve and pneumatic air cylinder of transmission control for any leakage and proper functioning, rectify it.

Yearly check (Include all Six month check schedule along with Yearly schedule.)

- Clean transmission body, suction strainer, filter housing and oil sump thoroughly.
- Replace new transmission oil and filter element.
- Check main oil pressure and transmission oil temperature for proper range.
- Check any leakage from joint, pipe line and filter sealing, if any rectify it.

7. SUSPENSION / BOGIE

Six Month check (Include all Three Monthly check schedule along with Six month schedule.)

- Examine condition of side bearer wear piece and wear plate.
- Check and ensure proper axle guide Assembly clearances with gauge.

Yearly check (Include all Six month check schedule along with Yearly schedule.)

- Bogie frame should be checked thoroughly after cleaning for any possible cracks.
- Check for wheel flange gear in the rear cover box of roller bearing axle box.
- Check alignment of guide for proper range.

Three Year check (Include Yearly check schedule along with Three Year schedule.)

- Clean thoroughly bogie and suspension Assembly Remove bogie and it attached brake hose components for replacing worn out bushes, packing and damages components.
- Check and replace worn out bushes and pins of bogie hanger.
- Check and replace guide bushes and wear plates.
- Check spring free height and pairing for Assembly if required replace spring in the suspension unit.
- Check and adjust bogie bolster clearances in primary and secondary stage by adding required packing after every wheel profiling.

Packing below the spring in Bogie Assembly after re-profiling the wheel.

- After wheel wear (in diameter) a packing, has to be provided below the lower spring seat to raise the body. After providing packing stopper assembly and axle safety strap assembly is adjusted accordingly.
- Once the diameter of the wheel reduced as (fully worn), it is discarded and is replaced by new ones. Earlier added / packing below the spring sheet should be removed to maintain buffer height.

8. AXLE DRIVE GEAR BOX (ADGB) ASSEMBLY

Six Month check (Include all Three Monthly check schedule along with Six month schedule.)

- Through clean surface of ADGB and Aux. gear box.
- Replace ADGB oil and suction strainer with new.
- Check for any leakages from oil seal, packing or pipe line of ADGB, rectify it.

Yearly check (Include all Six month check schedule along with Yearly schedule.)

- Check and ensure drive flange and coupling fastener condition for proper functioning.

3-1/2 to 4 Year P.O.H. or 2,50,000 km. run. to 3,00,000 km. run.

- This work should be carried out at authorized work shop. Remove final drive from 8 wheeler car, clean thoroughly ADGB and Auxiliary gear box surface and dismantle the Assembly and sub Assembly and inspect gear and bearing condition. The defective component, oil seal and packing should be replaced.

9. TORQUE ARM ASSEMBLY

Six Month check (Include all Three Monthly check schedule along with Six month schedule.)

- Spring disk to be checked physically. if found damage replace it.
- Pre- compression of spring disk to be maintained for the specified value by tightening the castle nut at one end of torque arm.
- Spherical joints and bushes are checked for wear.
- Check for proper tighten of lock nut and split pin.

Yearly check (Include Six month check schedule along with Yearly schedule.)

- Check rubber disc pad for any crack or ageing replace with new.

10. AXLE BOX ASSEMBLY

Yearly check (Include Three month check schedule along with Yearly schedule.)

- Replace new 'O' ring / packing.

11. WHEEL ASSEMBLY

Permissible variation in tread diameter during wheel machining :

- Wheels of the same axle 0.5 mm, Wheels of the same bogie 3.0 mm.

12. ULTRASONIC TESTING OF AXLE

- To ensure safety and reliability of rolling stock, the axles should be examined periodically for detection of any fatigue cracks by ultrasonic test using ultrasonic flaw detector. Testing of axles should be carried out by trained and certified personnel only. Under no circumstances testing should be carried out by any other personnel not meeting the requirement.
- Frequency of ultrasonic test** First test to be carried out after use of 30 days and there after every year.
- Scanning technique**
 - Far end scanning : This technique shall be used for testing the full length of the axle from both the ends.
 - - Near end –low angle scanning : This technique is used for examination of fatigue cracks, if any, in the raised wheel seat inner fillet area, which remains unscanned during far end scanning.
 - Trace delay technique : This technique should be used to examine the axle in part of 500 mm each. This technique may be employed for confirmation of the findings during far end scanning.
 - High angle scanning : This technique may be employed for confirmation of the findings during near end low angle scanning.
- Preparation before test**
 - Prior to ultrasonic testing, it should be insured that the axle end faces are smooth for achieving proper acoustic coupling. If required, the end faces of the axle should be properly smoothed by filing/emery finishing for achieving proper acoustic coupling.

- In low angle and high angle scanning, the onset of the signal in relation to the initial pulse is a function of the thickness of the Perspex wedge at the probe index marking and the velocity of the ultrasonic wave in the Perspex.

e. Acceptance criteria

- Axles found to produce signals as per the standard signals by far end and near end low angle scanning techniques should be declared satisfactory.
- Axle found to produce flaw signal other than those standard signals during scanning by far end and near end low angle scanning techniques shall be withdrawn from service.
- Further confirmation of the defect may be carried out by trace delay technique or high angle scanning technique as the case may be.

Note :- During service, few standard signals may disappear due to change in the geometrical configuration of axle. This aspect may be kept in view.

Recording of test observation

Personnel conducting the ultrasonic test shall maintain a register indicating the complete details of axle identification, technique used, observation made, code of procedure followed and his remarks. He should also record the observation on visual examination of the axle.

13. ELECTRICAL CHECK AND MAINTENANCE

Quarterly check (Include all Monthly check schedule along with Quarterly schedule.)

- Intensive air cleaning, rush preventing lubrication of electrical junction box terminal and proper tighten.
- Check function of all safety switches and sensor for proper working.

Six Month check (Include all Quarterly check schedule along with Six month schedule.)

- Clean and inspect contractor fingers, relay point for proper working.
- Check condition of electrical cable, replace worn frayed broken or corroded braided shunt.
- Check terminal connector and connection are properly tighten.
- Replace relay or contractor if worn out or pitted and malfunctioning.
- Check battery and terminal for clean and lubricate.

Yearly check (Include all six month check schedule along with Yearly schedule.)

- Check engine safety switches for proper working, if malfunctioning replace them.
- Check control panel switches for proper working, if malfunctioning replace them.
- Check battery voltage for proper working, check specific gravity top up if required.
- Apply petroleum jelly on battery terminal connection.

14. RECOMMENDED OIL AND LUBRICANTS

ENGINE (A.L N6)

Water coolant	-	240 Liter's. (twin radiator + coolant tank)
EURO COOL LL MAX 50		
Approx. quantity	-	30 liter's. x 2 = 60 Liter's
Oil multi grade 20 W/40	-	Indian oil/Bharat Petroleum/Hindustan
Petroleum / Equivalent.		

TRANSMISSION (AVTEC)

Approx. quantity	-	80 liter's. x 2 = 160 Liter's.
Transmission oil	-	Type C4 - SAE 30

AXLE DRIVE GEAR BOX

Hydrodynamic drive

Approx. quantity	-	2 x 45 liter's / box = 90 liter's
Gear oil	-	EP – 90

AXLE BOX

Grease	-	8 x 1.5 kg / Bearing (AP-3 Castrol)
Bogie dash port and side bearer housing	-	EP – 90 oil 0.5 x 8 = 4 Liter's.

HYD. OIL

Hyd. Oil	-	SAE 68, Qty.- As per equipment capacity.
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15. MAINTENANCE OF BATTERY

Maintenance of battery can be divided into two schedules

Monthly Schedule

In addition to the weekly schedule following are also to be attended.

- Check specific gravity and voltage of all cells.
- Remove inter cell connections, take out the cells, clean thoroughly the cells, inter cell and end cell connections and fit back in the TW. Apply petroleum jelly.
- Check vent plugs. Provide ceramic vent plug if not provided. Tighten if necessary and replace if missing.
- Check the cells by cell tester. Replace defective cells.

Hydrometer Reading And Battery Condition

Hydrometer reading Correct at 27° C	Battery Condition
1.250 ± 0.005	Fully Charged
1.170 ± 0.005	75 % Charged
1.120 ± 0.005	50 % charged
1.100 or below	must be recharged

16. MAINTENANCE OF BRAKE VALVES

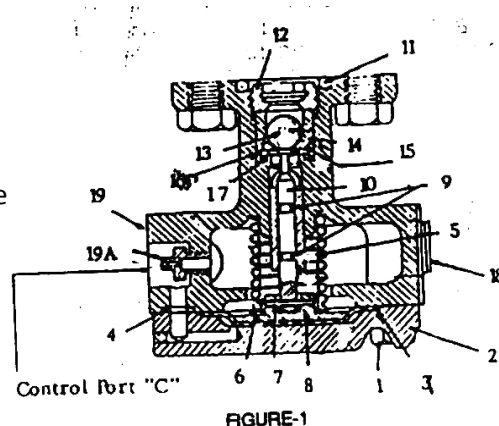
A-9 Automatic Brake Valve

The A-9 automatic brake valve is a compact self-lapping, pressure maintaining brake valve which is capable of graduating the application or release of OHE car air brakes. It has five positions, namely release, minimum reduction, full service, over reduction and emergency.

Maintenance Schedule

Monthly Schedule

- Check for leak tightness at inlet ,outlet and exhaust port on the pipe bracket.
- Check the operating handle movement ; it should be free of undue resistance.
- The pressure setting must be checked and reset, if necessary.
- Check the five position movement of the handle and the pressure in each position.
- Check the emergency position repeatedly for complete and instant operation.



Half yearly schedule

- The A-9 automatic brake valve should be dismantled from the OHE car cabin and overhauled as per procedure.

Yearly schedule

- Replace all rubber components, in addition to overhauling.

SA-9 Independent Brake Valve

- The SA-9 independent brake valve is a compact, self-lapping pressure maintaining straight air brake valve which performs the function of graduating the application or release of the OHE CAR air brakes.

Maintenance Schedule

Monthly Schedule

- Check the operating handle movement; it should be smooth and without any undue resistance.
- The pressure setting must be checked and reset, if necessary.
- Check the two position movement of the handle.
- Check for air pressure leakage in the valve.
- Half yearly schedule

The SA-9 independent brake valve should be dismantled from the OHE CAR and overhauled as per procedure.

Yearly Schedule

- Replace all rubber components, if found damaged in addition to overhauling.

C3W Distributor Valve

The C3W distributor valve is a diaphragm operated, self-lapping valve that functions to supply and exhaust compressed air in proportion to the control air pressure in the signal port.

Maintenance Schedule

Monthly Schedule

- Test the sensitivity of the relay valve functioning for the changes in control, by checking the delivery pressure for different control pressures.
- Ensure that there is no leakage in the valve.

Half Yearly Schedule

- The C3W distributor valve should be dismantled from the OHE CAR and overhauled as per procedure

Yearly Schedule

- Replace all rubber components, if found damaged in addition to overhauling.



D-1 Auto Drain Valve

The D-1 automatic drain valve automatically discharges condensate and moisture from a reservoir with each opening cycle of the compressor control device.

Maintenance Schedule

Monthly Schedule

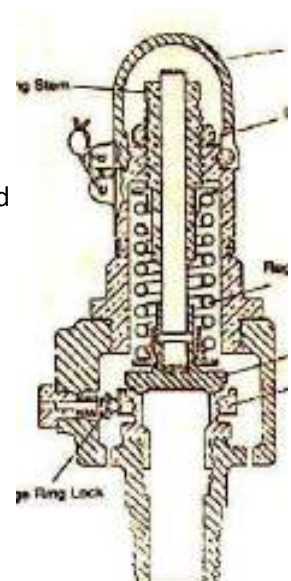
- No separate maintenance schedule is required to check the performance of the valve. However, the valve can be actuated manually by pressing the manual over-ride feature provided on the magnet valve for compressor governing pressure switch.

Half Yearly Schedule

- The D-1 auto drain valve should be dismantled from the OHE CAR and overhauled

Yearly Schedule

- Replace all rubber components, in addition to overhauling.



J-1 Safety Valve

The J-1 safety valve, when properly installed in the main reservoir piping, functions to prevent the excessive buildup of main reservoir pressure by venting the excess pressure to atmosphere as soon as the pressure reaches the predetermined setting.

Monthly Schedule

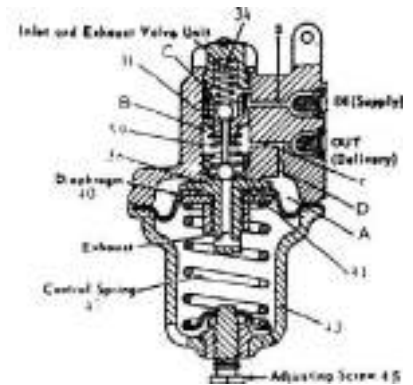
- Check the leakage in the safety valve.
- Check the set-up pressure and if necessary re- adjust the pressure setting.

Half Yearly Schedule

- The J-1 safety valve should be dismantled from the RBMV CAR and overhauled as per procedure.

Yearly Schedule

- Replace all rubber components, in addition to overhauling.



N-1 Reducing Valve

- The N-1 reducing valve is a small capacity, self-lapping diaphragm operated type regulating valve and functions to reduce an air supply pressure, to that of a lower delivery pressure.

Monthly Schedule

- There is no specific maintenance procedure called to ensure the proper functioning of this valve, other ensuring whether the maximum brake cylinder pressure limited to whatever level set on the N-1 reducing valve.

Half Yearly Schedule

- The N-1 reducing valve should be dismantled from OHE CAR and overhauled as per procedure

Yearly Schedule

- Replace all rubber components in addition overhauling.

Double Check Valve

It is a simple device with three port and very few components in the assembly. When two independent signal pressures are required to actuate the same control port of another device one a time, double check valve is used.

Maintenance schedule

Monthly schedule

- With the system fully charged, move the handle of SA-9 independent brake valve to minimum service position and allow the brake cylinder pressure to stabilize. Then make a full service application with the graduated hand control valve and observe that the brake cylinder pressure increase to whatever is allowed by the later. Release brakes at the graduated hand control valve fully. The brake cylinder pressure will drop down and again stabilize at the value corresponding to the pressure due to the minimum service position of the independent brake valve. Move the independent brake valve handle to release position and observe that the brake cylinder pressure reduces to zero completely.

Half yearly schedule

- The double check valve should be dismantled from the OHE car and overhauled as per procedure

Yearly schedule

- Replace all rubber components, in addition to overhauling.