

GOVERNMENT OF INDIA (BHARAT SARKAR)
(MINISTRY OF RAILWAYS (RAIL MANTRALAYA)
(RAILWAY BOARD)

BID INVITATION

GLOBAL TENDER NO: WTA-462

Bids are invited for and on behalf of the President of India from established and reliable manufacturers or their authorized agents, for supply of the following items :-

Item No.	Drawing No.	Description	Spécification	Quantity (Nos.)
1.	Drg.No.40077315	Axles Rough for WDG-4 locomotives	IRS R-43-92 (with corri.No.1)	1986
		TOTAL		
<u>Cost of Bid Document :-</u>				
Indian Rupees	US Dollars	Bid Guarantee Amount		Last date for submission & opening of Bids
5000.00	US \$ 112	Rupees	US Dollar	24.3.2011
		Rs. 20 lakh	45,000/-	

1. Non-transferable Bid documents containing complete description of the item required, as also other terms and conditions may be had from the office of the Railway Board, Ministry of Railways, RS (WTA) Branch, Room No. 156/22, Rail Bhawan, New Delhi-110001. The cost of Bid document is to be deposited with the FA&CAO, Northern Railway, Baroda House, New Delhi-110001. The bid documents will be issued on production of original receipt thereof.

2. The bid documents and specifications are also available on Indian Railways' website. The website address is <http://www.indianrailways.gov.in/indianrailways/tenders/stores-tenders.jsp> . The bid documents can be down loaded from the above website which shall be equally valid for participation in the tender. Nevertheless, the bidder shall be required to pay the amount of bid documents specified above by draft drawn in favour of FA&CAO, Northern Railway, Baroda House, New Delhi-110001(India) along with the offer.

EXECUTIVE DIRECTOR, RAILWAY STORES(P)
MINISTRY OF RAILWAYS
(RAILWAY BOARD)
RAIL BHAWAN, RAISINA ROAD,
NEW DELHI-110 001.
FAX NO. 91-11-23388394 / 91-11-23388598

**GOVERNMENT OF INDIA (BHARAT SARKAR)
MINISTRY OF RAILWAYS (RAIL MANTRALAYA)
(RAILWAY BOARD)**

PART-I

BID DOCUMENTS

TENDER NO.WTA-462

FOR

AXLES ROUGH FOR WDG-4 LOCOMOTIVES

PRICE: Rs.5,000/-

US \$ 112.00 (in Foreign)

SCHEDULE OF REQUIREMENTS

(See clauses 1.1 and 2.1 of “Instructions to Bidders”)

TENDER NO. WTA-462

NAME and address of the Bidder
(to whom issued)

BIDS WILL BE RECEIVED UPTO 14.30 HOURS ON)

BIDS WILL BE OPENED AT 15:00 HOURS ON)

AS PER BID INVITATION

AMOUNT OF BID GUARANTEE TO BE FURNISHED)

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

!0 Description, Quantity & Consignee

Item No.	Drawing No.	Description of stores	Spécification	Quantity (nos)	Port Consignee (Nos.)
1.	Drg.No.40077315	Axles Rough for WDG-4 locomotives	IRS R-43-92 (with corri.No.1)	1986 + 30% option	Kolkata/Mumbai
		TOTAL		1986	

2.0 DELIVERY:- Delivery to commence in two months and to be completed in four months from the date of placement of order/opening of letter of credit. Where the delivery of the stores offered is to be made in a phased manner, the full details thereof should be given.

3.0 For delayed deliveries, conditions contained in Bid Document Part –II shall be applicable.

4.0 Tender/Bid Document consists of following

a) Part -I

- i) Bid Invitation
- ii) Schedule of Requirements with special notes

b) Part-II

- i) Instructions to Bidders (Section-I)
- ii) General Condition of Contract (Section-II)
- iii) Special Condition of Contract (Section-III)
- iv) Annexures (Section –IV)

c) **Part-III**

v) Drawings & Specifications

SPECIAL NOTES :-

1. The bids should be submitted in 3 copies marked as 'ORIGINAL', 'DUPLICATE' and 'TRIPLICATE' and each of the bids should be complete in all respects. **Please note all the three copies of bid must be hard /Spiral bound.**

2.. The bidders should quote to the specifications in all respects. Clause wise compliance of Technical Specification is to be given. If there are any deviations to the Technical Specification, a Deviation Statement indicating clauses /sub-clauses, deviation proposed and justification thereof should be enclosed in the prescribed format given as Annexure- 9. In case of 'Nil' deviations the same should be specified.

3. Bidders are required to submit Performance Statement as per clause 4.2 of 'Instructions to Bidders'.

4. Indigenous (domestic) bidders should quote F.O.R destination rate, giving the detailed break-up separately as per clause 9.8 of 'Instruction to Bidders'.

5. Foreign bidders should quote F.O.B prices on the basis of F.O.B stowed and Trimmed, and C&F prices giving the detailed break-up separately as per clause 9.0 of 'Instructions to Bidders'. Bidders should quote freight charges. In absence of which the offer will be considered incomplete and liable to be ignored.

6.. The bidders should indicate the weight, size and volume of each of the package/container with the details of the materials proposed to be packed in such package and weight of each item. Basis of freight rate shall also be indicated in the bid. The quantity/number of wheels to be loaded in a 20' feet container should be specifically indicated in the offers by the suppliers.

7. **QUANTITY VARIATION CLAUSE:-** The Purchaser reserves the right to vary the quantity mentioned in the "Schedule of Requirements" by plus/minus 30 %. Purchaser also reserves the right to increase the contract quantity by a maximum of 30 % after the placement of order during the currency keeping the overall quantity increase within 30% of the bid quantity.

8.0 Bidders are requested to go through the tender documents carefully. References of some of the important clauses is as under-

- a) Qualifying Requirements of Bidders- clause 4 of 'Instructions to Bidders'
- b) Bid Guarantee- clause 6 of 'Instructions to Bidders'
- c) discrepancy in rates quoted in words and figures- clause 7.4 of 'Instructions to Bidders'
- d) Evaluation of Offers- clause 11 of 'Instructions to Bidders'
- e) Payment terms - clause 12 of 'Instructions to Bidders'

9.0 :

- a) Bids not supported with proof of remitting the cost of bid documents shall be rejected.
- b) Bids received not accompanied with specified 'Bid Guarantee' shall be considered un-responsive & rejected. Any fax/ swift message/ communication from the bank for establishing/issuing the bid guarantee later on will not be entertained.
- c) Bids received after stipulated time & date of opening shall not be considered.

10.0 Bids are liable to be rejected if -

- a) Bid is not open for acceptance for a minimum period of 180 days from the due date of opening of bid and Bid Guarantee is not valid for 225 days.
- b) Bidders who are not manufacturer, quote without letter of authority from manufactures.
- .c) Indian Bidder of foreign manufacturer is not enlisted with DGS&D under compulsory registration scheme
- d) If any manufacturer/seller gives the letter of authority specific for this tender to more than one bidder, bid of all the bidders who have produced such letter of authority will be considered disqualified.

* * *

CHECK LIST-I

1.	Have you purchased the Bid Documents or <i>submitted the cost of bid documents with offer</i> ?	Yes/No
2.	Have you submitted a Bid Guarantee <i>as per clause 6 of Instructions to Bidders</i> ?	Yes/No
3.	Have you furnished a Letter of Authority ? (If manufacture is not quoting directly). (Annexure 6)	Yes/No
4.	Have you furnished a Performance Statement ? (Annexure 3)	Yes/No
5.	Have you submitted the Banker's Report ? (Para 4.1 (b) of 'Instructions to Bidders')	Yes/No
6.	Have you furnished the Statement of Equipment & Quality Control ? (Annexure 4)	Yes/No
7.	Have you furnished the clause-wise comments on Technical specifications ? (Para 2.4 of 'Instruction to Bidders')	Yes/No
8.	Have you furnished the Statement of Deviations ? (Preferably 'Nil') (Annexure 9)	Yes/No
9.	<u>Have you quoted in the prescribed proforma</u> ?(Annexure 1 or 2)	Yes/No
10.	Have you kept your offer valid for 180 days ?	Yes/No

Signature & Seal of the Manufacturer/Bidder

CHECK LIST – II.

i.	Have you submitted the authorization letter authorizing your agent to quote on this tender ?	Yes/No
ii.	Have you indicated the complete name and address of the agents and details of the services to be rendered by the agents ?	Yes/No
iii.	Is the agent going to render after sale service ?	Yes/No
iv.	In case the answer to (iii) is yes, confirm that the agent has necessary infrastructure and competent staff to render the same.	Yes/No
v.	Have you submitted a copy of your agreement with your Indian Agents ?	Yes/No
vi.	Manufacturer or their sole selling agents may note that an agent can represent only one firm in a tender and any manufacturer cannot submit more than one offer against a tender through different sole selling agents or one directly and others through sole selling agents. In such a situation all the offers will be rejected.	Noted
vii.	Have you indicated your Indian Agent's Income Tax Permanent Account Number ?	Yes/No
viii	Are you aware that any payment against the contract, if placed, to your Indian agent directly by you in currency other than in Indian Rupees is against the Indian Laws ?	Yes/No
ix.	Are you aware that failure to disclose the full amount of remuneration / agency commission payable to your Indian Agents shall render the contract void ?	Yes/No
x.	If Indian agent of a foreign manufacturer is bidder, enlistment details with DGS&D under compulsory registration scheme have been enclosed.	Yes/No

GOVERNMENT OF INDIA
(BHARAT SARKAR)
MINISTRY OF RAILWAYS
RAIL MANTRALAYA
(RAILWAY BOARD)

BID DOCUMENTS
PART-II



RAIL BHAWAN, RAISINA ROAD,
NEW DELHI-110001, INDIA

FAX NO: +91 11 23383102 or 23388598 or 23388394

(updated in December,2010)

GOVERNMENT OF INDIA
(BHARAT SARKAR)
MINISTRY OF RAILWAYS
RAIL MANTRALAYA
(RAILWAY BOARD)

BID DOCUMENTS
PART-II



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SECTION-I

INSTRUCTIONS TO BIDDERS

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INSTRUCTIONS TO BIDDERS

1. GENERAL INSTRUCTIONS

- 1.1 On behalf of the President of India, the Executive Director, Railway Stores (P), Ministry of Railways, (Rail Mantralaya) (Railway Board), New Delhi, INDIA (hereinafter referred to as the Purchaser), invites Bids from manufacturers or other bidders authorized by manufacturer for the supply of items indicated in the "Schedule of Requirements".
- 1.2 Offer in the prescribed form at Annexure 1 or 2 (as applicable), should be submitted before the time and date fixed for the receipt of offers as set forth in the tender papers. **Offers received after the stipulated time and date, shall not be considered.**
- 1.3 All information in the offer must be in English. Information in any other language must be accompanied by its authenticated translation in English; failure to comply with this may render the offer liable to be rejected. In the event of any discrepancy between an offer in a language other than English and its English translation, the English translation will prevail.

2. TECHNICAL INFORMATION

- 2.1 Specifications indicated in the "Schedule of Requirements" forms part of 'Bid Document' and may also be obtained on payment from the following: —

(i) Indian Railway Standard Specifications from

- (a) The Controller of Publications, Civil Lines, Delhi-110054, INDIA.
- (b) Office of the High Commissioner for India, Publication Branch, India- House, Aldwych, London-WC.

ii) Indian Standards Specifications from

The DirectorGeneral, Indian Standards Institution, Manak Bhavan, 9
Bahadur Shah Zafar Marg, New Delhi-110001, INDIA.

(iii) Particular Specifications, Drawings and details from

Director General,
Research Designs and Standards Organisation,
Manak Nagar, Lucknow-226011, INDIA.

- 2.2 The equipments offered should be in accordance with the stipulated drawings and specifications in "Schedule of Requirements".
- 2.3 The bidder shall indicate compliance or otherwise against each clause and sub-clause of the technical specifications. The bidder shall, for this purpose, enclose a separate statement (Annexure-9) indicating compliance or

otherwise of each clause and sub-clause of specifications. Whenever the bidder deviates from the provisions of a clause/sub-clause, Bidder shall furnish detailed justification for the same in the "Remarks' column.

2.3.1 Details of variations from the drawings and specifications, if any, should be clearly indicated and in such an event where alternative product is offered, a certificate from the users must be furnished to the effect that the product offered is an alternative acceptable to the users in the country of origin and in one or more other countries, The names of users in those foreign countries should also be indicated.

2.4 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the tender specifications. However, the decision of the Purchaser in this regard shall be final. In this connection, attention of bidders is invited to the "Statement of Deviations" from tender specifications (Annexure-9) which should invariably be filled and submitted along with the offer and further two copies of the alternative specifications offered should be sent along with the offer.

3. AGENTS AND SERVICE FACILITIES IN INDIA—AGENCY COMMISSION

3.1 Foreign bidders which quote directly against the Bid invitation but take the services of an Indian Agent should indicate in their offer the name and address of their Indian Agents or the representatives they have for servicing in India.

3.2 Bidders should quote -

- (i) Net FOB and CFR prices exclusive of the amount of remuneration or commission and
- (ii) Agency Commission/remuneration payable to the Indian Agents. It should be understood that the purchaser will make direct payment of such commission to the Indian Agents in respect of a contract arising out of invitation to Bid, where the Indian Agents' remuneration/commission covers a part of the contract price.

3.3 Bidders are required to furnish following details -

- (i) The precise relationship between the foreign manufacturer/principals and their Indian Agents;
- (ii) The mutual interest which the manufacturer/principal and the Indian Agents have in the business of each other,
- (iii) Any payment which the Agent receives in India or abroad from the manufacturer/Principal whether as a commission for the contract or as a general retainer fee;
- (iv) Indian Agent's Income-Tax permanent Account number, and
- (v) All services to be rendered by the Agent whether of general nature or in relation to the particular contract and the facilities/infrastructure available with them for the same.
- (vi) Past performance.

3.3.1 Enlistment of Indian Agents with DGS&D under compulsory registration

scheme, if Indian agent is quoting directly as bidder. In such cases enlistment details with DGS&D under compulsory registration scheme are required to be enclosed..(Authority rule 143 of GFR 2005-Min.of Finance)

- 3.3 In the case of foreign bids, the Agency Commission payable to the Indian Agents shall be indicated in foreign currency in the space provided in the offer form. However, Agency Commission finally payable to the bidder's Agent in India under the contract will be converted to Indian Rupees at the telegraphic transfer buying rate of exchange ruling on the date of placement of the order and shall not be subject to any further exchange variation. The Agency Commission shall be paid in non-convertible Indian Rupees to the Indian Agents for each instalment of the supply after its receipt at the Indian Ports, on the basis of a certificate to be obtained by the paying authority from the respective Port Consignees.
- 3.4 Manufacturer or their sole selling agents may note that an agent can represent only one firm in a tender and any manufacturer cannot submit more than one offer against a tender through different sole selling agents or one directly and offers through sole selling agents. In such a situation all the offers will be rejected.
- 3.5 The agent is official representative of Manufacturer/Principal/Bidder. Accordingly Manufacturer/Principal /Bidder shall be fully responsible for the conduct of their appointed agent.

4. QUALIFYING REQUIREMENTS OF BIDDERS

- 4.1 The qualifying criteria governing this BID INVITATION, shall be as per the specification, .indicated in Schedule of Requirement (if any) The bidder shall provide a satisfactory evidence acceptable to the Purchaser to show that Bidder-
- (a) is a licensed manufacturer who regularly manufactures the items offered and has adequate technical knowledge and practical experience;
 - (b) has adequate financial stability and status to meet the obligations under the contract for which he is required to submit a report from a recognised bank or a financial institution;
 - (c) has adequate plant and manufacturing capacity to manufacture and supply the items offered within the delivery schedule offered by him;
 - (d) has an established quality control system and organization to ensure that there is adequate control at all stages of all manufacturing process.
- 4.2 For purpose of para-4.1, the bidder should additionally submit.—
- (a) a performance statement as in Annexure-3, giving a list of major supplies, effected in the recent past, of the items offered giving details of the Purchaser's name and address, Order No. and date and the quantity supplied and whether the supply was made within the delivery schedule;
 - (b) a statement indicating details of equipment employed and quality control measures adopted as in Annexure-4.

4.3 In addition to the above, further information regarding Bidder capacity/capability, if required by the Purchaser shall be promptly furnished by the bidder.

5. DELIVERY SCHEDULE

5.1 Bid should be as per the delivery schedule given in 'Schedule of Requirements'

6. EARNEST MONEY/ BID GUARANTEE

6.1 Bid Security for the amount stipulated in the "Bid Invitation " shall accompany each tender. The bid security shall be denominated in the currency of the bid or another freely convertible currency, and shall be in one of the following forms:

- (a) Deposit receipt, Pay orders and Bank Draft in favour of the Financial Adviser and Chief Accounts Officer, (RBC), Eastern Railway, Calcutta-700001 (India) from a Nationalized Indian Bank or scheduled commercial bank. In India.
- (b) Bonds of IRFC and KRCL (Acceptable in the name of bidder only).
- (c) In case bank guarantee is submitted as earnest money it should be issued by a nationalized Indian bank, or a scheduled bank in India in the format as per annexure-5 and having a validity period of 225 days (45 days beyond Bid Validity). In case the Bank Guarantee is issued by a foreign bank outside India, confirmation of the same by any nationalized bank in India is required, For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934. It shall be ensured that the complete particulars of the Banks' (issuing bank guarantee) mailing address including telephone number, fax number & E-mail ID are invariably indicated on the Bid bonds.
- (d) The EMD should be valid for 45 days beyond validity of the bid.
- (e) The Bank Guarantees(BGs) to be submitted by the bidders may be sent directly to the Purchaser by the issuing bank under registered Post A.D. and a copy of BG submitted along with the offer.
- (f) Indian agent can pay BID Guarantee, if authorised by the Bidder, in manner other than Bank Guarantee and Bonds of IRFC and KRCL. In case of Bank Guarantee the 'applicant' for issue of Bank Guarantee shall be the 'Bidder'

6.2 If the validity of the offer is extended, BID Guarantee Money/Bank Guarantee duly extended shall also be furnished, failing which the offer after the expiry of the aforesaid period shall not be considered by the Purchaser.

6.3 No interest will be payable by the Purchaser on the BID Guarantee Money.

6.4 The BID Guarantee deposited is liable to be forfeited if the bidder withdraws or amends, impairs or derogates from the BID Invitation in any respect within the period of validity of the offer.

- 6.5 The BID Guarantee of the successful bidder will be returned after the Contract Performance Guarantee as required is furnished and formal contract duly signed is received by the Purchaser.
- 6.6 If the successful bidder fails to furnish a Contract Performance Guarantee and or fails to return the formal contract duly signed within fifteen days of the receipt of the formal contract, then the BID Guarantee Money is liable to be forfeited by the Purchaser.
- 6.7 The BID Guarantee Money of all unsuccessful bidders will be returned by the Purchaser within one month of the placement of contract on successful bidder.
- 6.8 **Any bid not accompanied by a Bid Guarantee in one of the approved forms given in Clause 6.1 above shall be considered as non-responsive & rejected.**

7, SUBMISSION OF OFFERS

- 7.1 All BIDS submitted shall be legible and should be submitted in 3 copies marked as 'ORIGINAL', 'DUPLICATE' & 'TRIPLICATE' and must be hard /spiral bound..
- 7.2 Any individual (s) signing the BID or other documents connected their with should specify whether he is signing.—
- (i) as sole proprietor of the concern or as an attorney of the sole proprietor,
 - (ii) as a partner or partners of the firm;
 - (iii) as a Director, Manager or Secretary in the case of a Limited Company duly authorised by a resolution passed by the Board of Directors or in pursuance of the Authority conferred by Memorandum of Association.
- 7.3 In the case of a firm not registered under the Indian Partnership Act, all the partners or the attorney duly authorised by all of them should sign the tender and all other connected documents. The original power of attorney or other documents empowering the individual or individuals to sign, should be furnished to the Purchaser for verification, if required.
- 7.4 All prices and other information like discounts etc. having a bearing on the price shall be written both in figures and words in the prescribed Offer Form. **Incase of any discrepancy in rates quoted in words & figures the Rates quoted in words shall be considered.**
- 7.5 Offer in the prescribed form (Annexure-1 or 2 as applicable) should be addressed to the President of India through the Executive Director, Railway Stores (P), Ministry of Railways, (Railway Board), Rail Bhavan, Raisina Road, New Delhi-110001—INDIA.
- 7.6 Offers shall be as per the General and Special Conditions of Contract given in the Bid Documents. However, the bidder shall indicate his acceptance or otherwise against each clause and sub-clause of the General and Special Conditions of Contract. For this purpose, the bidder shall enclose a separate statement (Annexure-9) indicating only the deviations from any clause or

sub-clause of the General and Special Conditions of Contract, which the Bidder proposes with, full. Justification for such deviations. The Purchaser, however, reserves the right to accept or reject these deviations and Purchaser's decision thereon shall be final.

7.7 Offers are required from the actual manufacturers of the stores or Bidders authorised who should submit a letter of authority from their Principals/Manufacturer as in Annexure-6. **Offers from brokers and middlemen shall not be accepted.**

7.8 Each page of the offer must be numbered consecutively, should bear the tender number and should be signed by the bidder at the bottom. A reference to the total number of pages comprising the offer must be made at the top right hand corner of the first *page*.

8. LOCAL CONDITIONS

8.1 It will be imperative on each bidder to fully acquaint himself of all the local conditions and factors which would have any effect on the performance of the contract and cost of the stores. In his own interest, the foreign bidder should familiarise him-self with the applicable Income Tax Act, the Companies Act, the Customs Act and related Laws in force in India. The Purchaser shall not entertain any request for clarifications from the bidder regarding such local conditions. No request for the change of price, or time schedule of delivery of stores shall be entertained after the BID is submitted to the Purchaser.

9. PRICE BASIS AND INDEMNITY

9.1 Foreign bidder shall quote his prices on the basis of (i) FOB nearest Port of shipment having facilities to handle the same, and also indicate CFR PRICE at the Indian Port of Entry indicated in the Schedule of Requirement.

9.2 "Under the CFR price, the FOB price and Ocean freight charges shall be indicated separately"

9.3 The terms FOB and CFR shall be as defined in the current edition of International Rules for the interpretation of the Trade Terms published by the International Chamber of Commerce, Paris and commonly referred to as INCOTERMS.

9.4 These prices should not include agency commission payable to Indian Agents which shall be exhibited as already indicated in clause-3.2. The Indian Agent's commission shall be shown in foreign currency as a definite amount and not as a percentage.

9.5 The prices should be stated only in one currency and should either in US Dollars or in a freely convertible currency. However the portion of the bid price relating to components of Indian origin to be incorporated in the stores and/or supply shall be stated in Indian Rupees.

The contract price will normally be paid in the currencies in which the price is stated in the successful tender. However, purchaser reserves the right to effect payment of the equivalent amount in the currency or currencies of the country of origin of the goods in case the price is stated in other currencies. The equivalent amount will be calculated on the basis of rates of exchange prevalent on the date of payment.

9.6 The prices quoted shall be firm and not subject to any variation. In the case of CFR delivery, Ocean freight charges included must also be firm and no variation will be allowed on this account after the opening of tenders.

9.7 Quoted Rates should be made only for units specified in the "Schedule of Requirements".

9.8 Bidders submitting indigenous offers shall indicate the "Free at destination" Price, which shall include all state and Central Taxes and Excise Duties leviable on the Final finished supplies tendered for, handling, Freight & Other charges. A complete break-up showing the ex-factory price, taxes and excise duties transit, incidentals and handling charges, freight and insurance charges, if any, shall also be given. However, the Purchaser reserves the right to place the order on Free at (Free on Rail) destination or Free at (Free on Rail) station of dispatch basis. In case the contract is placed on the basis of F.O.R station of dispatch, the supplier shall book the goods by rail/ road, freight prepaid and get reimbursement of the freight element from the Purchaser as per actual rail freight or the quoted amount whichever is less. The freight element will be paid along with 90 % bill for the cost of the stores.

10 INSURANCE

10.1 In the case of FOB & CFR offer insurance shall be arranged by the Purchaser.

10.2 In the case of indigenous offers, the Purchaser will not pay separately for transit insurance and the contractor will be responsible till the entire stores contracted for arrive in good condition at destination. Where the bidder intends to insure the goods, the insurance charges should be clearly indicated, separately in the break-up. The consignee will advise the contractor within 45 (forty five) days of the arrival of goods at the destination, any loss/damage etc. of the goods and it shall be the responsibility of the contractor to lodge the necessary claim on the carrier and/or insurer and pursue the same. The contractor shall, however, at his own cost replace/rectify immediately, to the entire satisfaction of the consignee, the goods lost/damaged, without waiting for the settlement of the claim.

11. EVALUATION OF THE OFFERS

11.1 The bids/ tenders received would be evaluated on the basis of landed price at port mentioned in Schedule of Requirement or at destination (in case of indigenous offer). To facilitate evaluation and comparison, the Purchaser will convert all Bid Prices expressed in the amounts in various currencies in the Bid Price as payable, to Indian Rupees at the B.C. selling exchange rate established by the State Bank of India, New Delhi, as on the date of the Bid Opening.

11.2 The bids received will be evaluated by the Purchaser to ascertain the best and lowest acceptable tender in the interest of the purchaser, as specified in the specifications and tender documents.

11.3 Wherever Specified Training, Installation. Commissioning, Annual Maintenance charges etc. will be added to the landed Price.

11.4 BASIS OF THE EVALUATION OF OFFERS

11.4.1 The Bids received would be evaluated on the basis of either:

a) Free at Destination price quoted on the Lines indicated in para 9.8 above

b) Quoted FOB price plus ocean freight as quoted by the Bidder & if not quoted by the bidder then Ocean freight intimated by the Ministry of Shipping, Road Transport & Highways (Deptt. of Shipping) of the Government of India Plus Agency commission insurance, applicable Custom Duty, inland freight, clearance and handing charges up to the station of dispatch.

OR

c) Quoted C&F/CIF prices plus applicable Customs Duty, inland freight, clearance and handing charges up to the station of dispatch.

OR

d) For partly imported and partly indigenous assembled/manufactured machines, Free at dispatch price quoted for indigenous components on the lines indicated in para 9 plus FOB/C&F/CIF price for imported components as per (b) & (c) above.

Purchaser reserves the right to adopt any of the above basis.

Cargo handling charges prior to the shipment, wherever applicable shall be to the contractors account.

The terms FOB and C&F shall be defined in accordance with 'INCOTERMS'.

11.4.2 The following components would be added to FOB price (excluding agency commission) to calculate the landed price of an imported offer-

(i) Ocean freight as quoted by the bidder & if not quoted then Ocean freight as advised by Ministry of shipping including firm and variable component

- (ii) Insurance charges as per IR's open cover policy
- (iii) 1% Port handling charges on calculated CIF value
- (iv) Landed cost = CIF value + customs duty + 1% port handling charges on CIF value + agency commission, if any
- (v) Thereafter, other charges as leviable and as required in terms of tender conditions (Viz. Training, installation & commissioning charges etc. as quoted, if any) are to be added to the total landed price to arrive at the total price of the offer

11.5 After selecting the lowest evaluated Bid on this basis, the Purchaser reserves the right to sign the contract either on (i) CFR or (ii) FOB price quoted by the supplier.

12. PAYMENT TERMS

The standard payment terms subject to recoveries, if any, under liquidated damages clause in 'General Conditions of Contract' will be as under:

12.1 For Foreign Supplies.

Payment against foreign supplies shall be made through irrevocable & unconfirmed 'letter of credit'. All charges of Letter of Credit, levied by Foreign Bankers shall be borne by the contractor.

- i) 90% payment on proof of inspection and shipment within 30 days of receipt of shipping documents as specified under:
 - i) 2 copies of negotiable cum original bill of lading.
 - ii) Signed certified commercial invoice showing the description, quantity and price of stores shipped together with the number, weight and volume of such packages shipped.
 - iii) Certificate that the amounts claimed are correct in terms of the contract.
 - iv) A copy of Contractor's letter addressed to the Insurer and port consignee advising the closing particulars as per Annexure attached.
 - v) Inspection Certificate issued by the Inspecting Officer.
- ii) Balance 10% payment within 90 days of receipt of goods at an Indian port of discharge on furnishing a bank guarantee as per Annexure-11 fully indemnifying the purchaser against all losses incurred by the purchaser during the guarantee period stipulated in warranty clause.

12.2 For indigenous supplies:

- i) 90% payment on proof of inspection and dispatch documents as specified, within 30 days of receipt of specified documents.
- ii) balance 10% payment within 90 days of receipt of supplies at destination station on furnishing a bank guarantee as per Annexure-11 fully

indemnifying the purchaser against all losses incurred by the purchaser during the guarantee period stipulated in warranty clause.

13. DEDUCTIONS

13.1 Payment as in clause 12.1 and 12.2 above shall be subject to deduction of any amounts for which the contractor is liable under the contract against this tender or any other contract in respect of which the President of India is the Purchaser.

14. PAYMENT PROCEDURE

14.1 Payment against foreign contracts will be arranged through normal banking channels except where payment through Letter of Credit has been stipulated in the contract. In the case of payment through the Letter of Credit, all charges levied by the foreign Banks shall be borne by the Contractor. In case the contract is covered by financing from a bilateral or multilateral source, the payment shall be governed by the terms & conditions applicable in the relevant credit/loan agreement.

15. SHIPPING ARRANGEMENTS

15.1 In the event of an order being placed on CFR basis, the contractor shall arrange shipment in accordance with the requirements of the Ministry of Surface Transport, New Delhi, INDIA,. The Purchaser will, however, in accordance with the option clause, have the right to change over the contract to FOB basis, if considered necessary, after giving one month's notice to the contracting firm. Shipping arrangements in the case of FOB contracts shall be made by the Shipping Co-ordination and Chartering Division/Shipping Coordination Officer, Ministry of Surface Transport, New Delhi, INDIA, in accordance with details given in Annexure-7. Particulars of cargoes for which shipping space will be required in the execution of contract should be furnished in detail (as per Annexure-8) to the Chief Controller of Chartering, Shipping Co-ordination Officer, Ministry of Surface Transport, Govt. of India, New Delhi, INDIA, as soon as possible after the relevant contract is finalized.

16. PACKING

16.1 The items tendered will have to undergo arduous transportation before reaching the destination and will have to be stored and handled in tropical climatic conditions (including monsoons) before they are put to the actual use. It is, therefore, imperative that packing for every item is decided by taking into consideration, *inter-alia*, the above vital factors, so as to eliminate damage/deterioration of items in transit/transshipment/handling or during storage.

16.2 The specification of the packing proposed shall be indicated.

16.3 The packing advices should bring out the weight, dimensions and size of each bundles/ package. Where is not possible to give weight of the bundles/packages, the contractor must indicate the volume of the

bundles/packages, the number of pieces per bundle/package, number of bundles/ packages, and total weight of the items supplied.

- 16.4 Where the materials are shipped in bundles/packages the pieces in each bundle/package should be of uniform sizes to facilitate quick acceptance and payment. The number of pieces in each bundle/ package should also be the same.

17. IMPORT LICENCE (In case of Indigenous Bidders)

- 17.1 The successful tenders will have to apply to the proper Government Authority for grant of requisite import license (if any) for such items as required within 14 days of the advance letter of acceptance/telegraphic acceptance and the purchaser will only render such assistance as considered necessary.

18. ACCEPTANCE OF TENDER

- 18.1 The Purchaser may accept a tender for a part or whole of the quantity offered, reject any tender without assigning any reason and may not accept the lowest or any tender.
- 18.2 Acceptance of tender will be communicated by either FAX /Letter of tender direct to the bidder or through his authorised agents. In case where acceptance is indicated by FAX, the letter of acceptance of tender will be delivered by post to the contractor as soon as possible, but the FAX communication shall be deemed to conclude the contract.

19. EFFECTS AND VALIDITY OF OFFER

- 19.1 The submission of any offer connected with these specifications and documents shall constitute an agreement that the bidder shall have no cause of action or claim, against the Purchaser for rejection of his offer. The Purchaser shall always be at liberty to reject or accept any offer or offers at his sole discretion and any such action will not be called into question and the bidder shall have no claim in that regard against the Purchaser.
- 19.2 The offer shall be kept valid for acceptance for a minimum period of one hundred and eighty (180) calendar days from the date set for opening of tenders.
- 19.3 The purchaser may solicit the bidder's consent to an extension of the period of bid validity. The request and the responses thereto shall be made in writing (or by FAX). If the bidder agrees to the extension request, the validity of bid guarantee provided shall also be suitably extended. A bidder may refuse the request without forfeiting its bid guarantee. A bidder granting the request will not be permitted to modify its tender.

19.4 Offers shall be deemed to be under consideration immediately after they are opened and until such time the official intimation of award is made by the Purchaser to the bidder. While the offers are under consideration, bidders and/or their representatives or other interested parties are advised to refrain from contacting the Purchaser by any means. If necessary, The purchaser will obtain clarifications on the offers by requesting for such information from any or all the bidders, either in writing or through personal contact, as may be considered necessary. Bidders will not be permitted to change the substance of their offers after the offers have been opened.

20.0 OFFERS BY FAX

- 20.1 FAX offers accompanied by bid security are acceptable. Offers received through FAX at the time of opening of bid and complete in all respects and duly signed by the authorized signatory shall be accepted subject to the firm submitting a post confirmation copy duly signed by the authorized person as per the tender conditions within 10 (ten) working days for indigenous firms and 21 (twenty one) days for foreign firms. However, fax offers should be accompanied by 'Bid Security' in original as required in the Bid invitation.
- 20.2 The offers received by FAX shall be deemed as un-responsive in case confirmation copy is not received within the time stipulated in clause 20.1 above.
- 20.3 It shall be the sole responsibility of the bidder to ensure that the FAX offers are dropped in appropriate tender box/ submitted in sealed cover/covers and within prescribed time and date.

21. LAST DATE OF RECEIPT OF THE TENDERS

- 21.1 The offers complete in all respects should reach the Executive Director, Railway Stores (P), Ministry of Railways (Railway Board), Rail Bhavan, Raisina Road, New Delhi-110001, INDIA, not later than 14-30 hrs. on the date specified in the "Schedule of Requirements".
- 21.2 The tenders received shall be opened in the presence of such of the bidders or their representatives, who may like to be present at 15-00 hrs. on the date specified in the "Schedule of Requirements" and the names of bidders and the rates tendered by them will be read out.
- 21.3 Offers received after due date and time shall not be considered.**

EXECUTIVE DIRECTOR, RAILWAY STORES (P)
Ministry of Railways
(Railway Board), Rail Bhavan
Raisina Road, New Delhi-110 001(India)

SECTION -II

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GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

1.1 Throughout these conditions and in the specifications, the terms :—

- (i) "The Purchaser" means the President of India, acting through the Executive Director, Railway Stores (P), Ministry of Railways, (Railway Board), Rail Bhawan, Raisina Road, New Delhi-110001, INDIA, unless the context otherwise provides.
- (ii) "The Inspecting Officer" means the person, firm or department nominated by the Purchaser to inspect the stores on his behalf and *the* Deputies of the Inspecting Officer so nominated.
- (iii) "The Contractor" means the person, firm or company with whom the order for the supply is placed and shall be deemed to include the Contractor's successors (approved by the Purchaser), representatives, heirs, executors and administrators, as the case may be, unless excluded by the terms of the contract.
- (iv) "Contract" means and includes the bid invitation, instructions to tenderers, general conditions of contract, acceptance of tender including advance acceptance of tender, special conditions of contract, particulars and other conditions specified in the acceptance of tender, the agreement entered into between the Purchaser and the contractor including all attachments and Appendices thereto and all documents incorporated by reference therein and also includes a repeal order, which has been accepted or acted upon by the contractor and a formal agreement, if executed.

2. EXECUTION

2.1 The whole contract is to be executed in the most approved, substantial and workman like manner, to the entire satisfaction of the Purchaser or his nominee, who, both personally and by his deputies, shall have full power, at every stage of progress, to inspect the stores at such times as he may deem fit and to reject any of the stores, which he may disapprove, and his decision thereon, and on any question of the true intent and meaning of the specification shall be final and conclusive.

3. RESPONSIBILITY OF THE CONTRACTOR FOR EXECUTING CONTRACT

3.1 **Risk in the Stores** —The contractor shall perform the contract in all respects in accordance with the terms and conditions thereof. The stores and every constituents part thereof, whether in the possession or control of the contractor, his agents or servants or a carrier, or in the joint possession of the contractor, his agents or servants and the Purchaser, his agents or servants, shall remain in every respect at the risk of the contractor until their actual delivery to the consignee at the stipulated place or destination or where so provided in the acceptance of tender, until their delivery to a person specified in the "Schedule of Requirements", as interim consignee for the purpose of despatch to the consignee. The contractor shall be responsible for all loss destruction, damage of deterioration of or to the stores from any cause whatsoever while the stores after approval by the inspector are awaiting despatch or delivery or are in the course of transit from the contract to the consignee, or the interim consignee as the Case may be. The contractor alone shall be entitled and responsible to make claim against Railway Administration or any other carrier in respect of

non-delivery, short-delivery, mis-delivery, loss, destruction, damage or deterioration of the goods entrusted to such by carrier the contractor for transmission to the consignee or the interim consignee as the case may be.

3.2 Consignee's Right of Rejection

- (i) (i)Notwithstanding any approval which the Inspector may have given in respect of the Stores or any materials or other particulars Or the work or workmanship involved in the performance of the contract (whether with or without any test carried out by the 'Contractor or the Inspector or under the direction of the Inspector and notwithstanding delivery of the stores where so provided to the interim consignee, it shall be lawful for the consignee, on behalf of the Purchaser, to reject the stores or any part, portion of consignment thereof within 90 days after actual delivery thereof to him at the place or destination specified in the schedule, if such stores or part/portion of consignment thereof is not in all respect in conformity with the terms and conditions of the contract whether on account of any loss, deterioration or damage before despatch or delivery or during transit or otherwise how-so-ever.
- (ii) Provided that where, Under the terms of the 'contract the stores are required to be delivered to an interim consignee for the purpose of despatch to the consignee, the stores shall be at the Purchaser's risk after their delivery to the interim consignee but nevertheless it shall be lawful for the consignee on behalf of the Purchaser to reject the stores or any part/portion of consignment thereof upon their actual delivery to him at the destination, if they are not in all respects in conformity with the terms and conditions of contract, except where they have been damaged or have deteriorated in the course of transit or otherwise after their delivery to the interim consignee.
- (iii) The provisions contained in the clause-23 relating to the removal of stores rejected by the Inspector shall, *mutatis mutandis*, apply to stores rejected by the consignee as herein provided;

4 INDEMNITY

- 4.1 The. contractor shall at all times indemnify the Purchaser against all claims which may be made in respect of the said work for infringement of any right protected by patent registration design or trade mark; provided always that in the event of any claim in respect of an alleged breach of a patent registered or trade mark being made against the Purchaser he shall notify the contractor of the same and the contractor shall be at liberty, but at his own expense, to conduct negotiations for settlement or any litigation that may arise therefrom.

5. PRICES

5.1 The prices stated are to include all costs of stamping, painting marking, protection or preservation of the stores and any claim what-so-ever that may arise from the manufacture packing, shipment, marking or delivery of stores in accordance with those consideration and include payment by the contractor of Dock and Harbour dues, port's rates, export taxes and other fees or charges, if any, levied because of exportation. The prices stated are also to include all rights(if any) of patent, registered design or trade mark and the contractor shall indemnify the Purchaser against all claims in respect of the same.

6. TRANSFER AND SUBLETTING

6.1 The contractor shall not sublet (otherwise than that which may be customary in the trade concerned), transfer, assign or otherwise part with directly or indirectly to any person or persons, whatever is in this contract, or any part thereof without the previous written permission of the purchaser or his nominee.

7. DRAWINGS

7.1 If any dimensions figuring upon a drawing differ from those obtained by scaling the drawings, the figured dimensions shall be taken as correct.

8. ALTERATIONS

8.1 The Purchaser or his nominee may require such alteration to be made on the work, during its progress as he deems necessary. Should these alterations be such that either party to the contract considers an alteration in price justified, such alteration shall not be carried out until amended prices have been submitted by the contractor and accepted by the Purchaser. Should the contractor proceed to manufacture such stores without obtaining the consent in writing of the Purchaser to an amended price, he shall be deemed to have agreed to supply the stores at such price as may be considered reasonable by the Purchaser.

9. PROGRESS REPORT

The contractor shall render such reports as to the progress of the contract and in such form as may be called for by the Purchaser or his nominee. The submission and acceptance of these reports shall not prejudice the right of the Purchaser in any manner.

10. DELIVERY- INVOICES AND FREIGHT

Delivery F.O.B

10.1 The stores shall be delivered by the contractor free on board such vessels in such port or ports named in the quotation, as the Purchaser or his nominee may require.

10.2 Such number of inspection certificates, advice notices, packing accounts and invoices, as may be required by the Purchaser or his nominee, shall be furnished by the contractor at his own cost.

- 10.3 Freight for the conveyance of the stores or any part thereof will engaged by the Purchaser or his nominee, who will give due notice to the contractor when and on board what vessels they or such part thereof are to be delivered. Should the stores or any part thereof be not delivered within 7 days of the receipt of such notice by the contractor, the contractor will be liable for all payments and expenses that the Purchaser may incur or be put to, by reason of such non-delivery including dead and extra freight demurrage or vessels and any other charges incurred by the Purchaser what-so-ever.

Delivery CFR

- 10.4 "For CFR delivery the stores shall be delivered free of expense to the Purchaser on Board the vessels with ocean transportation to named Indian Port, including any charges for unloading etc. till the cargo is safely delivered to the Port Consignee, at the said Port.
- 10.5 The seller shall ensure use of Lloyds classified vessel. A certificate to this effect shall invariably be sent by the seller to the Port Consignee(s) and also to the Purchaser and the Paying Authority along with other shipping documents. Any extra expenditures by way of extra insurance etc., if incurred, for use of non-classified/overaged vessel, shall be on seller's account.

11. CUSTOMS DRAWBACK

- 11.1 If, by reason of a customs notification published after the placing of the contract, the stores to be supplied shall become, on exportation, subject to customs drawback in respect of duty paid on them or on the materials used in their manufacture, the contractor shall recover the amount of the drawback and the contract price of the stores shall be reduced by the amount so recovered.

12. MARKING

- 12.1 The marking of all goods supplied shall comply with the requirement of the Indian Acts relating to merchandise marks or any amendment thereof and for the rules made there under. The following marking of the materials is required:
- (a) The following particulars should be stenciled with indelible paint on all the materials/packages supplied loose;
- (i) Contract number
 - (ii) Specification No.
 - (iii) Item No.
 - (iv) Port consignee
 - (v) Abbreviated consignee marks
- (b) The marking as in (a) above should be on labels securely clamped to the packages or bundles so as not to break loose during transit. The use of steel tags for this purpose should be avoided.
- (c) In addition to the marking as specified above, distinguishing colour marks should be given so as to distinguish the ultimate consignee in India.

13. PACKING

- 13.1 The contractor will be held responsible for the stores being sufficiently and properly packed so as to ensure their being free any loss or injury on arrival at their destination,
- 13.2 Where materials are to be supplied in bundles, the gross weight should not exceed 1.9 metric tonne per bundle for shipments to Indian Ports.

14. SUPPLY OF DRAWINGS, TRACINGS AND SPECIFICATIONS

- 14.1 Any drawings, tracings or descriptions specified shall, unless otherwise directed, be furnished by the contractor with the first consignment of the work to which they relate and no payment whatsoever will be made until such drawings, tracings or descriptions have been furnished to the satisfaction of the Purchaser.

15. CORRUPTION AND PAYMENT OF COMMISSION

- 15.1 Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the contractor, his agents or servants, or any one on his/their behalf to any employee, representative or agent of the Purchaser or any person on his behalf in relation to the execution of this or any other contract with the Purchaser shall, in addition to the criminal liability under the laws in force, subject the contractor to cancellation of this and all other contracts with the Purchaser, and also to payment of any loss resulting from any such cancellation to the like extent as is provided in case of cancellation under clause 'DEFAULT' given below and the Purchaser shall be entitled to deduct the amounts so payable from any money otherwise due to the contractor under this or any other contract. Any question of dispute as to the commission of any offence under the present clause shall be settled by the Purchaser in such manner and on such evidence or information as may be thought fit and sufficient and his decision shall be final and conclusive on the matter.

16. DELIVERY PERIOD

- 16.1 The earliest possible delivery is required in India. The Purchaser attaches the utmost importance to timely deliveries and requests the manufacturers to take not of the liquidated damage and risk purpose conditions as are applicable in case of delays in supplies.

17. LIQUIDATED DAMAGES

- 17.1 In the event of the contractor's failure to have stores ready for delivery by the time or times respectively specified in the letter of acceptance or contract, the Purchaser may withhold any payment until the whole of the stores have been fully supplied and delivered and may deduct or recover from the contractor as liquidated damages (and not by way of penalty), a sum at the rate of 2 percent (two per cent) of the price of any stores which the contractor has failed to deliver as aforesaid for each and every month (part of a month being treated as a full month) during which the stores may not be ready for delivery, subject to a limit of 10% of the Contract Value. Provided, however, that if the delay shall have arisen from any cause which the Purchaser may admit as reasonable ground for further time, the Purchaser may in his discretion allow such additional time as he may consider to have been required by the circumstances

of the case and shall forego the whole or such part, as he may consider reasonable of his claim for such loss or damages as aforesaid.

18. DEFAULT AND RISK PURCHASE - Deleted

- 18.1 Should the contractor fail to have the stores ready for delivery by the time or times agreed upon as aforesaid, or should the contractor in any manner otherwise fail to perform the contract or should it have a receiving order made against it, or make or enter into any arrangements or composition with its creditor, or suspend payment (or being a company should enter into liquidation either compulsory or voluntary) the Purchaser shall have power, under the hand of the Executive Director Railway Stores (P), Ministry of Railways, (Railway) , New Delhi , INDIA, to declare the contract at an end at the risk and cost of the contractor in the way, in such a case, the contractor shall be liable for any liquidated damages for delay as provided above and for any expenses, losses, or damages which the Purchaser may be put to incur or sustain by reason of or in concession with the contractor's default.
- 18.2 In the event of risk purchase being made against the contract, the contractor will be liable to pay to the Purchaser extra expenditure incurred *i.e.* in procuring the same or similar stores and/or equipment, the difference between the rate quoted by the lowest acceptable bidder/tenderer against the tender and that at which the risk purchase contract is concluded, provided it is done within nine months from the date of breach of the contract.
- 18.3 The cancellation of the contract may be either for whole or part of the contract at Purchaser's option. In the event of the Purchaser terminating this contract in whole or in part, he may procure upon such terms and in such manner as he deems appropriate, supplies or services similar to those so terminated, if risk purchase is not rendered possible for any reason in which event the contractor shall be liable to the Purchaser for any excess cost for such similar supplies/or services; provided that the contractor shall continue the performance of this contract to the extent not terminated under the provisions of this clause.

19. FORCE MAJEURE

- 19.1 In the event of any unforeseen event directly interfering with the supply of stores arising during the currency of the contract, such as insurrection, restraint imposed by the Government act of legislative or other authority; war, hostilities, act of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restriction, strikes, lockouts, or act of God, the contractor shall, within a week from the commencement thereof, notify the same in writing to the Purchaser with reasonable evidence thereof. If the force major condition(s) mentioned above be in force for a period of 90 days or more at any times, the purchaser shall have the option to terminate the contract on expiry of 90 days of commencement of such force majeure by giving 14 days notice to the contractor in writing. In case of such termination, no damages shall be claimed by either party against the other, save and except those which

had occurred under any other clause of this contract prior to such termination.

20. PERFORMANCE GUARANTEE BOND

- 20.1 After a letter of acceptance is issued by the Purchaser, the Contractor shall furnish Performance Guarantee Bond in the proforma attached (Annexure-I0) from a Nationalised Indian Bank or scheduled commercial foreign Bank branches operating in India governed by Reserve Bank of India guidelines or foreign bank duly countersigned by a Nationalised Indian bank within 15 days from the receipt of the letter of acceptance of the tender by the contractor or the execution of the contract whichever is earlier, for an amount equivalent to 10% of the value of the contract in the same currency of the contract price. The expenses to be incurred for the counter signature of a Nationalised Indian Bank shall be borne by the contractor. On the Performance and completion of the contract in all respects the Performance Guarantee Bond will be returned to the Contractor without any interest. In case furnishing of an acceptable Performance Guarantee Bond is delayed by the contractor beyond the period provided above and Bond is accepted by the Purchaser, liquidated damages, as provided in clause 17 for the period of delay in submission of the Bond, may be levied. Alternatively, the Purchaser may declare the contract as at an end and enforce clause 18. The PG bond will be submitted through the issuing bank directly to the purchaser.
- 20.2 The Performance Guarantee Bond shall remain in full force and effect during the period that would be taken satisfactory performance and fulfillment in all respects of the contract i.e. till satisfactory commissioning of the machine(s) at consignee's works, and shall in the first instance be valid up to twelve months after the date of last shipment/delivery of the goods contracted to be purchased provided that before the expiry of the date of validity of the Performance Guarantee Bond, the Contractor on being called upon by the Purchaser from time to time, shall obtain from the Guarantor Bank, extension of time for validity thereof for a period of six months, on each occasion. The extension or extensions aforesaid, executed on non Judicial stamp paper of appropriate value must reach the purchaser at least thirty days before the date of expiry of the Performance Guarantee Bond on each occasion.
- 20.3 As and when an amendment is issued to the contract, the contractor shall, within fifteen days of the receipt of such an amendment furnish to the Purchaser an amendment to the Performance Guarantee Bond rendering the same valid for the contract as amended.
- 20.4 This Performance Guarantee Bond and/or any amendment thereto shall be executed or stamped paper of requisite money value in accordance with the laws of the country in which the same is/are executed by the party competent to do so. The Performance Guarantee Bonds executed in India shall also be got endorsed by the Collector under Section 32 of the Indian Stamp Act, 1899 for adequacy of the Stamp Duty, by the contractor.

21. INSPECTION

21.1 Inspection will be carried out by the Purchaser or his nominee. The cost of the inspection will be on Purchaser's account subject to other provisions herein contained. At least four weeks notice must be given to the inspecting authority to enable him to arrange the necessary inspection.

21.2 Facilities for Test and Examination

- (i) The contractor shall provide, without extra charge, all materials, equipment, tools labour and assistance of every kind which the Purchaser or his nominee may consider necessary for any tests and examinations, which he or his nominee shall required to be made on the contractor's premises and shall pay all costs attendant thereon.
- (ii) The contractor shall also provide and deliver free of charge, at such places as the Purchaser or his nominee may nominate, such material as he or his nominee may require for test by chemical analysis or independent testing machines. The cost of any such tests will be defrayed by the purchaser unless it is stated in the specification that it is to be paid by the contractor.

21.3 Notification of Result of Inspection

On the stores being found acceptable by the Inspecting Officer, he shall furnish the contractor with necessary copies of the Inspection Notes duly completed, for being attached to the contractor's bill in support thereof.

21.4 Certification of Inspection and Approval

- (i) No stores will be considered ready for delivery until the Purchaser or the Inspecting Officer nominated by him shall have certified in writing that they have been inspected and approved by him.
- (ii) It shall be the responsibility of the contractor to ensure that only such goods as have been duly inspected and approved by the Inspecting Authority are offered for arranging shipment to the Government of Indian Fow4rarding Agents and to furnish to them a certificate as under: -

"Certified that the goods offered for arranging shipment have been duly inspected and approved by the prescribed in accordance with the terms of the contract a copy of the Inspection Certificate issued in this regard is enclosed."

22. INSPECTING OFFICER – POWER OF REJECTION

22.1 The Inspecting Officer shall have the power:-

- (i) Before any Stores or part thereof submitted for inspection, to certify

- that they cannot be in accordance with the contract owing to the adoption of any unsatisfactory method of manufacture.
- (ii) To reject any stores submitted as not being in accordance with the specifications.
 - (iii) To reject the whole of the installment tendered for inspection, if after inspection of such portion thereof as may in his discretion think fit, he is satisfied that the same unsatisfactory.
 - (iv) To mark the rejected stores with a rejection mark, so that they may be early identified if re-submitted.

22.2 The Inspecting Officer's decision as regards the rejection shall be final and binding on the contractor.

23. CONSEQUENCES OF REJECTION

23.1 If on the Stores being rejected by the Inspecting Officer or consignee at the destination, the contractor fails to make satisfactory supplies within the stipulated period of delivery, the purchaser shall be at liberty to: —

- (i) Request the contractor to replace the rejected stores forthwith but in any event not later than a period of 21 days from the date of rejection and the contractor shall bear all the cost of such replacement, including freight, if any, on such replacing and replaced stores but without being entitled to any extra payment on that or on any other account.
- (ii) Purchase or authorise the purchase of quantity of the stores rejected or others of a similar description (when stores exactly complying with the particulars are not, in the opinion of the Purchaser, which shall be final; readily available) without notice to the contractor, at his risk and cost and without affecting the contractor's liability as regards to the supply of any further installment due under the contract, or
- (iii) Cancel the contract and Purchase or authorise the Purchase of the stores or others of a similar description (when stores exactly complying with the particulars are not, in the opinion of the Purchaser, which shall be final readily available) at the risk and cost of the contractor. In the event of action being taken under sub-clause (ii) above or this sub-clause, the provisions of clause-17 and 18 of the General Conditions of Contract shall apply as far as applicable.

23.2 Where, under a contract, the price payable is fixed on F.O.B. port of export or F.O.R. despatching station, the contractor shall, if the stores are rejected at the destination by the consignee, be liable in addition to his other liabilities including refund of price recoverable in respect of the stores so rejected, to reimburse to the purchaser, the freight and all other expenses incurred by the Purchaser in this respect.

23.3. Rejected Stores

On rejection of any stores submitted for inspection at a place other than the premises of the contractor, such stores shall be removed by the contractor at his own cost, subject as hereinafter stipulated, within 14 days of the date of intimation of such rejection. If the concerned communication is addressed and posted to the contractor at the address mentioned in the schedule, it will be deemed to have been served on him at the time when such communication would in course of ordinary post reach the contract.

Provided that the Inspector may call upon the contractor to remove dangerous, infected or perishable stores within 48 hours of the receipt of such communication and the decision of the Inspector in this behalf shall be final in all respects. Provided further that where the price or part thereof has been paid, the consignee is entitled without prejudice to his other rights to retain the rejected stores till the price paid for such stores is refunded by the contractor and that such retention shall not in any circumstances be deemed to be the acceptance of the stores or waiver of rejection thereof.

- 23.4 All rejected stores shall in any event and circumstances remain and always be at the risk of the contractor, immediately on such rejection. If such stores are not removed by the contractor within the periods aforementioned, the Inspector may remove the rejected stores and either return the same to the contractor at his risk and cost by such mode of transport as the Purchaser or the inspector may decide, or dispose off such stores at the contractor's risk and on his account and retain such portion of the proceeds, if any, from such disposal, as may be necessary to recover any expense incurred in connection with such disposals (or any price refundable as a consequence of such rejection). The Purchaser shall in addition, be entitled to recover from the contractor, the handling and storage charges for the period during which the rejected stores are not removed/disposed off in accordance with the provisions thereof.

24. ACCEPTANCE OF STORES DESPATCHED AFTER EXPIRY OF DELIVERY PERIOD

- 24.1 In cases where only a portion of the stores ordered is tendered for inspection at the fag end of the delivery period and also in cases where inspection is not completed in respect of the portion of the stores tendered for inspection during the delivery period because of the reason that adequate notice for inspection in accordance with clause-21 of General Conditions of Contract was not given by the contractor, the Purchaser reserves the right to cancel the order for the balance quantity, at the risk and expense of the contractor without any further reference to him. If the stores tendered for inspection during or at the fag end of the delivery period are not found acceptable after carrying out the inspection, the Purchaser is entitled to cancel the contract in respect of the same at the risk and expense of the contractor. If however, the stores tendered for inspection are found acceptable, the Purchaser may grant an extension of the delivery period subject to the following conditions:
- (a) The Purchaser has the right to recover from the contractor the liquidated damages on the stores, which the contractor has failed to deliver within the period fixed for delivery.
 - (b) That no increase in price on account of any statutory increase in or fresh imposition of Customs Duty, Excise Duty, Sales Tax, Freight Charges, foreign exchange variation or on any account of any other tax or duty leviable in respect of the stores specified in the contract, which takes place after the date of delivery period stipulated in the said Acceptance of Tender shall be admissible on such of the said stores as are delivered after said date.
 - (c) That notwithstanding any stipulation in the contract for increase in price on any other ground no such increase which takes place after the delivery date stipulated in the contract shall be admissible on

such of the said as are delivered after the said date.

- (d) But nevertheless the purchaser shall be entitled to the benefit of any decrease in price on account of reduction in or remission of Customs Duty, Excise Duty, Sales Tax or on account of any other ground which takes place after the expiry of the above mentioned date namely the delivery date stipulated in the contract. The contractor shall allow the said benefit in his bills or in the absence thereof shall certify that no decrease in price on account of any of these factors has taken place.

24.2 The contractor shall not despatch the stores till such time an extension in terms of clause 24.1) and (b) above is granted by the Purchaser and accepted by the contractor. If the stores are despatched by the contractor before an extension letter as aforesaid is issued by the Purchaser and the same are accepted by the consignee, the acceptance of the stores shall be deemed to be subject to the conditions (a) and (b) mentioned in clause-24.1 above.

24.3 In case where the entire quantity has not been tendered for inspection within the delivery period stipulated in the contract and the Purchaser chooses to grant an extension of the delivery period, *the same* would be subject to conditions (a) and (b) mentioned in clause 24.1 above.

25. EXPORT LICENCE

25.1 If required, the contractor shall apply to the appropriate Government Authority of the exporting country for the grant of the requisite Export Licence within seven days of the receipt of contract.

26. ARBITRATION

26.1 (a) For Domestic Bidders/Tenderers

In the event of any question, dispute or difference arising under these Conditions or any Special Conditions of Contract or 'Instructions to Tenderers' or in connection with this contract (except as to any matters the decision of which is specifically provided by these Conditions or 'Instructions to Tenderers' or the Special Conditions) the same shall be referred to the sole arbitration of a Gazetted Railway Officer appointed to be the Arbitrator, by any Member of the Railway Board, Ministry of Railways, New Delhi, INDIA. The Gazetted Railway Officer to be appointed as Arbitrator, however, will not be one of those who had an opportunity to deal with the matters to which the contract relates or who in the course of their duties as railway servants had expressed views on all or any of the matters under dispute or difference. The award of the Arbitrator shall be final and binding on the parties to this contract.

(b) For Foreign Bidders/Tenderers

In the event of any dispute or difference arising between the parties hereto relating to any matter arising out or connected with this agreement, such dispute or difference shall be referred to the award of two Arbitrators, one Arbitrator to be nominated by the Purchaser and the other to be nominated by the contractor or in the case of the said Arbitrators not agreeing, then to the award of an Umpire to be appointed by the Arbitrators in writing before proceeding with the

reference, and in case the Arbitrators cannot agree to the Umpire, who may nominated by the Chief Justice of India. The award of the Arbitrators, and in the event of their not agreeing, of the Umpire appointed by them or by the Chief Justice of India, shall be final and binding on the parties. Subject as aforesaid, the Indian Arbitration Act, 1996 the rules there under and any statutory modification or re-enactment thereof, shall apply to the arbitration proceedings under this agreement. The venue of the arbitration in all cases shall be in India.

- 26.2 In the event of the arbitrator dying, neglecting or refusing to act, or resigning or being unable to act for any reason or his award being set aside by the court for any reason, it shall be lawful for the authority appointing the arbitrator to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.
- 26.3 The arbitrator may from time to time, with the consent of all the parties to the contract enlarge, the time for making the award.
- 26.4 Upon every and any such reference, the assessment of the cost incidental to the reference and award respectively shall be at the discretion of the arbitrator.
- 26.5 Subject as aforesaid, the Arbitration Act—1996 and the rules there under and any statutory modification thereof, for the time being in force, shall be deemed to apply to the arbitration proceedings under this clause.
- 26.6 Work under the contract, if reasonably possible, may continue during the arbitration proceedings and no payment due to or payable by the Purchaser shall be withheld on account of such proceedings.
- 26.7 The venue of arbitration shall be the place from which the acceptance note is issued, or such other place as the arbitrator at his discretion may determine.
- 26.8 In this clause the authority to appoint the arbitrator includes, if there be no such authority, the officer who is, for the time being discharging the functions of that authority, whether in addition to other functions or otherwise.

27. LAWS GOVERNING THE CONTRACT

- 27.1 This contract shall be governed by the laws of India for the time being in force.
- 27.2 Irrespective of the place of delivery, the place of performance or place of payment under the contract, the contract shall deemed to have been made at the place in India from where the contract has been issued.

27.3 Jurisdiction of Courts

The courts of the place from where the contract has been issued shall alone have jurisdiction to decide any dispute arising out of or in respect of the contract.

28. HEADINGS

28.1 The headings of conditions hereto shall not affect the construction thereof.

29. GENERAL

29.1 Bidders/Tenderers must ensure that the condition laid down for submission of offers detailed in the preceding paras, are completely and correctly fulfilled.

29.2 Tenders which are not complete in all details as stipulated above may be summarily rejected.

30. SECRECY

30.1 The contractor shall take all reasonable steps necessary to ensure that all persons employed in any work in connection with the contract, have full knowledge of the Official Secrets Act and any regulations framed thereunder

30.2 Any information obtained in the course of the execution of the contract by the contractor, his servants or agents or any person so employed, as to any matter whatsoever, which would or might be directly or indirectly, of use to any enemy of India, must be treated as secret and shall not any time be communicated to any person.

30.3 Any breach of the aforesaid conditions shall entitle the Purchaser to cancel the contract and to purchase or authorise the purchase of the stores at the risk and cost of the contractor in accordance with the clause-18 of the General Conditions of Contract. In the event of such cancellation, the stores or parts manufactured in the execution of the contract shall be taken by the Purchaser at such price as he considers fair and reasonable and the decision of the Purchaser to such price shall be final and binding on the contractor.

SECTION-III

SPECIAL CONDITIONS OF CONTRACT

(PART-II)

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SPECIAL CONDITIONS OF CONTRACT

The following special conditions shall apply to contracts for the supply of plant and machinery and manufactured equipment. But where they differ from the General Conditions, the Special Conditions shall over-ride the General Conditions.

1. DEFINITIONS

- 1.1 (a) The term "Work" means all the work specified or set forth and required in and by the said specifications, drawings and "Schedule of Requirements", here to annexed or to be implied there from or incidental thereto, or be hereafter, specified or required in such explanatory instructions and drawings (being in conformity with the said original specification (s), drawing (s), and "Schedule of Requirements" and also in such additional instructions and drawings not being in conformity as aforesaid, shall from time to time, during the progress of the work hereby contracted for, as are supplied by the Purchaser).
- (b) The term "Test" shall mean such test or tests as are prescribed by the specification (s) to be made by the Purchaser, or his nominee, after erection at site, before the plant over by the Purchaser.

2. PERFORMANCE OF WORK

- 2.1 The work shall be performed at the place or places specified in the tender or at such other place or places as may be approved by the Purchaser.

3. SPECIFICATIONS

- 3.1 If the contractor shall have any doubt as to the meaning of any portion of the conditions of the specifications, drawings or plans, he shall (before submitting the tender) set forth the particulars thereof and submit them to the Purchaser in writing, in order that any such doubt may be removed.

4. MISTAKES IN DRAWINGS

- 4.1 The contractor shall be responsible for and shall pay for any alterations of the works due to any discrepancies, errors or omissions in the drawings or other particulars, whether they have been approved by the purchaser or not, provided that such discrepancies, errors or omissions are not due to inaccurate information or particulars furnished to the contractor on behalf of the Purchaser. If any dimensions figured upon a drawing or plan differ those obtained by scaling the drawing or plan the dimensions as figured upon the drawing or plan shall be taken as correct.

5. VARIATIONS

- 5.1 No alterations, amendments, omissions, additions, suspensions, or variations of the work (hereinafter referred to as "Variations") under the contract as shown by the drawing or the specifications shall be made by the contractor except as directed in writing by the Inspector, but the Inspector shall have full power, subject to the proviso hereinafter contained, from time to time, during the execution of the contract, by notice in writing to instruct the contractor to make such variation without prejudice to the contract, and the contractor shall carry out such variations and be bound by the same conditions, so far as applicable, as though the said variation occurred in the specifications. If any suggested variation would, in the opinion of the contractor, if carried out, prevent him from

fulfilling any of his obligations or guarantees under the contract, he shall notify the Inspector thereof in writing and Inspector shall decide forthwith, whether or they shall carried out. If the Inspector confirms his instructions, the contractor's obligations and guarantees shall be modified to such an extent as may, in the opinion of the Inspector, be justified. The difference of cost, if any occasioned by any such variations shall be added to or deducted from the contract price as the case may require. The amount of such difference, if any, shall be ascertained as determined in accordance with the rates specified in the schedules of prices, so far as the same may be applicable, and where the rates are not contained in the said schedules or not applicable they shall be settled by the Purchaser and contractor jointly. But the Purchaser shall not become liable for the payment of any charge in respect of any such variations, unless the instructions for the performance of the same shall have been given in writing by the Inspector.

- 5.2 In the event of Inspector requiring any variations, such reasonable and proper notice shall be given to the contractor, as will enable him to make his arrangements accordingly, and in cases where goods or materials are already prepared, or any designs, drawings or patterns made or work done is required to be altered, a reasonable sum in respect thereof shall be allowed by the Purchaser, provided that no such variations shall, except with the consent in writing of the contractor, be such as will involve an increase in the total price payable under the contract by more than 10 percent thereof.
- 5.3 In any case, in which the contractor has received instructions from the Inspector for carrying out the work which either then or later, will, in the opinion of contractor, involve a claim for additional payment, the contractor shall, as soon as reasonably possible, after receipt of the instructions foresaid, advise the Inspector to that effect.

6. OBLIGATION TO CARRY OUT INSPECTOR'S INSTRUCTIONS

6.1 The contractor shall also satisfy the Inspector that adequate provision has been made: —

- (i) to carry out his instructions fully and with promptitude;
- (ii) to ensure that parts required to be inspected before use are not used before inspections; and
- (iii) to prevent rejected parts used in error. Where, parts rejected by the Inspector have been rectified or altered, such parts shall be segregated for separate inspection and approval before being used in the work.

7. RESPONSIBILITY FOR COMPLETENESS

- 7.1 Any fittings or accessories, which may not be specifically mentioned in the specifications but which are usual or necessary, are to be provided by the contractor without extra charge, and the equipment must be complete in all details.
- 7.2 In all cases where the contract provides for tests on site, the Purchaser, except where otherwise specified, shall provide, free of charge, such labour materials, fuels, stores apparatus and instruments as may be requisite from time to time and as may reasonably be demanded; to efficiently carry out such tests of the plants, materials or workmanship etc., in accordance with the contract.
- 7.3 In the case of contracts requiring electricity for the completion of the works and for test on site, such electricity, when available, shall be supplied free to the contractor at the pressure of the

ordinary supply. Unless otherwise specified, the purchase will supply free of charge to the contractor:—

- (a) unskilled labour;
- (b) timber, stores and lifting tackle necessary for the erection of the plant and all consumable stores including fuel and lubricating oils required during erection, setting to work and testing of the plant. The contractor shall also provide—
 - (i) skilled labour and
 - (iii) tools and any other equipment which may be necessary.

8. SOURCE OF FINANCING & PAYMENT

- 8.1 Foreign exchange required for the proposed import will be made available from free resources or Rupee payment arrangement or from bilateral credit on the choice of the purchaser.

9. SHIPMENT OF STORES BEYOND THE STIPULATED DELIVERY PERIOD FOR FOB CONTRACT.

- 9.1 In the event of the contractor failing to ship the stores duly inspected and passed within the stipulated delivery, the Purchaser is entitled to cancel the contract in respect of the same at the risk and cost of the contractor or invoke the clauses providing other remedies such as liquidated damages as provided in the contract. However, if he so chooses, the Purchaser may grant an extension of the delivery period subject to:
- (a) The Purchaser recovering from the contractor liquidated damages as stipulated in the conditions of contract for the stores, which the contractor has failed to ship within the period fixed for delivery after the inspection and a passing of the stores.
 - (b) The Purchaser retains the right to recover any additional expenditures which may arise on account of variation in exchange rates, Custom Duty, Freight, insurance charges etc. directly relatable to the delay in shipping of the stores.
- 9.2 The contractor shall not despatch the stores till such time an extension in terms of the above is granted by the Purchaser. If the stores are despatched by the contractor before an extension letter as aforesaid is issued by the Purchaser, the supply of the stores shall be deemed to be subject to conditions set above.

10. WARRANTY

- 10.1 The contractor shall warrant that everything to be furnished hereunder shall be free from defects and faults in design, material, workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards for goods of the type ordered and in full conformity with the contract specifications and samples if any, and shall if operable, operate properly.
- 10.2 This warranty shall survive inspection of, payment for and acceptance of the goods, but shall expire 40 (Forty) months after the delivery at ultimate destination in India or 36 (Thirty Six) months from the date of commissioning and proving test of equipment at ultimate destination in India, whichever shall be earlier, except in respect of complaints, defects and/or claims notified to the contractor within 3 (Three) months of expiry of such date. Any approval of

acceptance by purchaser of the stores or of the material incorporated herein shall not in any way limit the contractor's liability.

- 10.3 The contractor's liability in respect of any complaints defects and/or claims shall be limited to the furnishing and installation of replacement parts free of any charge or the repair of defective parts only to the extent that such replacement or repair are attributable to or arise from faulty workmanship or material or design in the manufacture of the stores, provided that the defects are brought to the notice of contractor within 3 (Three) months of their being first discovered during the guarantee period of 3 (Three) months from the date of expiry of warranty period, or at the option of the Purchaser to the payment of the value, expenditure and damage as hereafter mentioned.
- 10.4 The contractor shall, if required, replace or repair the goods or such portion thereof as is rejected by the. Purchaser free of cost at the ultimate destination or at the option of Purchaser, the contractor shall pay to Purchaser value thereof at the contract price or in the absence of such price at price decided by the Purchaser and such other expenditure and damages as may arise by reason of the breach of the conditions herein specified.
- 10.5 All replacement and repair that the Purchaser shall call upon the contractor to deliver or perform under this warranty shall be delivered and performed by the contractor within 2 (Two) months, promptly and satisfactorily.
- 10.6 Prompt clearance of the warranty replacement on arrival at Port/Airport shall be the responsibility of the contractor or his representatives after payment of Customs and other duties as applicable".
- 10.7 If the contractor so desires, the replaced parts can be taken over by him or his representative in India for disposal as he deems fit at the time of replacement of goods/parts. No claim whatsoever shall lie on the Purchaser for the replaced parts thereafter.
- 10.8 The warranty herein contained shall not apply to any material which shall have been repaired or altered by the Purchaser, or on his behalf in any way without the consent of the contractor, so as to effect the strength, performance or reliability or to any defects to any part due to misuse, negligence or accident.
- 10.9 The decision of the Purchaser in regard to contractor's liability and the amount, if any, payable under this warranty shall be final and conclusive.

11. DELIVERY SCHEDULE

- 11.1 The contractor shall supply stores in accordance with the delivery schedule indicated in the "Schedule of Requirements" annexed.

SECTION-IV

ANNEXURES

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Annexure-1

(Please see clauses-1.2 and 7.5 of Instructions to Bidders').

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)**

This proforma is to be used only for offers of imported goods by tenderers. See clause- 9.1 & 9.6 of 'Instructions to Bidders'

To,
THE PRESIDENT OF INDIA,
acting through the Executive Director Railway Stores (P),
Ministry of Railways, Railway Board.
New Delhi-110001

OFFER FORM for Tender No.....Date of opening.....Time.....Hours

1. We.....hereby certify that we are established firm of manufacturers and authorised agents of M/s.....with factories at which are fitted with modern equipment and where the production methods, quality control and testing of all materials and parts manufactured or used by us are open to inspection by the representative of Indian Railways. We hereby offer to supply the following items at the prices and within the period of delivery indicated below :

Item No	Description	Specification	Unit	Qty	Price per unit exclusive of Agency commission (in the currency/ currencies of manufacturer's country/ countries or US\$)			Agency commission per unit (in the currency/ currencies of manufacturer's country/ countries or US\$)	Total CFR value of offer per unit (Inclusive of agency commission in the quoted currency/ currencies)	Terms of payments	Delivery period	Gross weight and dimensions of package per unit*
1	2	3	4	5	6			7	8	9	10	11
					FOB part of country of supply 6(a)	CFR Indian Port 6(b)			(6(c) + 7)			

* The information how many number of units be able to come in one 20' & 40' container should be **invariably given** for freight comparison

2. We are agreeable to payment of agency commission to our Agents in India in non-convertible Indian Rupees.
The relevant information is given below.
(To be filled in by the Bidder)

- (a) The name and address of the Agent.....
 - (b) Service to be rendered by the Agent..... .. „
 - (c) Amount at remuneration for the Agent..... ..
3. It is hereby certified that we have understood the Instructions to Bidders, and also the General and Special Conditions of Contract attached to the tender and have thoroughly examined specifications drawings and/or patterns quoted in the 'Schedule of Requirements' and are thoroughly aware of the nature of stores required and our offer is to supply stores strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the General and Special Conditions of Contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.
4. We hereby offer to supply the stores detailed above or such portion thereof, as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 180 days from the date of opening of tender, We shall be bound by the communication of acceptance despatched within the prescribed time.
5. Earnest Money/Bid Guarantee for an amount equal to.....is enclosed in the form specified in Clause-6 of the 'Instructions to Bidders'.

Dated.....

Signature and seal of *Manufacturer/Bidder*

- Note.— (i) The Bidders may prepare their own offer forms as per this proforma.
- (ii). No change in the proforma is permissible.
 - (iii) No erasures or alterations in the text of the offer are permitted. Any correction made in the offer shall be initialled by the bidder.
 - (iv) Please refer to clause 3.2 of instructions to Bidders before filling column 8.
 - (v) FIGURES IN Columns 6 to 9 (both inclusive) should be in both figures and words.

Annexure-2

(Please see clauses-1.2 and 7.5 of Instructions to Bidders').

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)**

This proforma is to be used only for offers of indigenous goods by tenderers. See clause 9.2 of

To,
THE PRESIDENT OF INDIA,
acting through the Executive Director Railway Stores (P),
Ministry of Railways, Railway Board.
New Delhi-110001

OFFER FORM for Tender No.....Date of opening.....Time.....Hours

1. We.....hereby certify that we are established firm of manufacturers and authorised agents of M/s.....with factories at which are fitted with modern equipment and where the production methods, quality control and testing of all materials and parts manufactured or used by us are open to inspection by the representative of Indian Railways. We hereby offer to supply the following items at the prices and within the period of delivery indicated below :

Item No	Description	Specification	Unit	Qty	Price per unit	Total value of offer (in Indian Rupees)	Terms of payments	Delivery period	Break-up of Price in Column-6 (In Indian Rupees) See table below	Break-up of Price in Column-11 (a) (In Indian Rupees) See table below	Gross weight and dimensions of package per unit
1	2	3	4	5	6	7	8	9	10	11	

Break-up of Price in Column-6 (In Indian Rupees)

10										
Ex factory price	Excise Duty	Other levies	Sales tax	Packing and forwarding in detail	F.O.R station of despatch price	Freight to destination	Insurance charges (if any)	F.O.R. Destination price		Total (in Indian Rupees)
A	B	C	D	E	F	G	H	I		J

Note: For station of dispatch price will be compared with landed price at port of imported offer.

Break-up of Price in Column-10 (a) (In Indian Rupees)

11							
C.I.F. value of imported equipment/ components	Duties on 11a	Other levies	Incidentals	Value added component in India			Total Ex-factory price Country of origin from components where imported
A	B	C	D	E			F g
				Stores	Labour	Overheads & others	

Value in Indian Rs.

%age

2. It is hereby certified that we have understood the Instructions to Bidders, and also the General and Special Conditions of Contract attached to the tender and have thoroughly examined specifications drawings and/or patterns quoted in the 'Schedule of Requirements' and are thoroughly aware of the nature of stores required and our offer is to supply stores strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the General and Special Conditions of Contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

3. We hereby offer to supply the stores detailed above or such portion thereof, as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 180 days from the date of opening of tender, We shall be bound by the communication of acceptance despatched within the prescribed time.

4. Earnest Money/Bid Guarantee for an amount equal to..... is enclosed in the form specified in Clause-6 of the 'Instructions to Bidders'.

Dated.....

Signature and seal of *Manufacturer/Bidder*

- Note.— (i) The Bidders may prepare their own offer forms as per this proforma.
(ii). No change in the proforma is permissible.
(iii) No erasures or alterations in the text of the offer are permitted. Any correction made in the offer shall be initialled by the bidder.
(iv) Please refer to clause 3.2 of instructions to Bidders before filling column 8.
(v) FIGURES IN Columns 6 to 9 (both inclusive) should be in both figures and words.

Annexure-3

*(Please see clause 4.2(a) of
Instructions to Bidders').*

PROFORMA FOR PERFORMANCE STATEMENT

Tender No.....Date of opening.....Time.....Hours

Name of the firm.....

S.No.	Order placed by (Full address of Purchaser	Order No. and date	Description and quantity of stores ordered	Value of order	Date of completion of delivery		Remarks indicating reasons for late delivery, if any	Has the equipment been satisfactorily commissioned and is it giving trouble free service?
					As per contract	Actual		

Signature and seal of *Manufacturer/Bidder*

ANNEXURE—4

(Please see clause-4.2 (b) of
'Instructions to Bidders')

PROFORMA FOR EQUIPMENT AND QUALITY CONTROL

Tender No.....Date of opening.....Time.....Hours.

Name of the Firm

(Note All details required only for the items tendered)

1. Name & full address of the firm
2. Telephone & Telex No. Office/Factory/Works
3. Telegraphic address
4. Location of the manufacturing factory
5. Details of Industrial Licence, wherever required as per statutory regulations
6. Details of plant & machinery erected and functioning in each Deptt.
(Monographs & description pamphlets be supplied if available).
7. Details of the process of manufacture in the factory in brief
8. Details & stocks of raw material held
9. Production capacity of item (s) quoted for, with the existing plant & machinery
 - 9.1 Normal
 - 9.2 Maximum -
10. Details of arrangement for quality control of products such as laboratory, testing Equipment etc.
11. Details of staff
 - 11.1 Details of technical supervisory staff-in-charge of production & quality control
 - 11.2 Skilled labour employed
 - 11.3 Unskilled labour employed
 - 11.4 Maximum No. of workers (skilled & unskilled) employed on any day during the 18 months preceding the date of application.
12. Whether stores are tested to any standard specification, if so, copies of original test certificate Should be submitted in triplicate.
13. Are you registered with the Directorate General of Supplies & Disposals, New Delhi, INDIA, • If so, furnish full particulars of registration, period of currency etc.
14. Are you a Small Scale Unit, registered with the National Small Industries Corporation Ltd., New Delhi, INDIA. If so, furnish full particulars of registration, currency period etc.

*Signature and seal of the
Manufacturer/ Bidder*

ANNEXURE—5

(Please see clause-6.1 (b) of
'Instructions to Bidders')

PROFORMA BANK GUARANTEE FOR BID GUARANTEE (ON BANK'S LETTERHEAD WITH ADHESIVE STAMP)

Ref.....

Date.....

Bank Guarantee No.

To,
The PRESIDENT OF INDIA
acting through the Executive Director Railway Stores (P),
Ministry of Railways, (Railway Board),
Rail Bhavan,
NEW DELHI-110001

Dear Sir,

In accordance with your invitation to tender
No.....for Supply
of.....M/s.....
hereinafter called the bidder with the following Directors on their Board of Directors/Partners of
the firms:

- | | |
|----|-----|
| 1. | 2. |
| 3. | 4. |
| 5. | 6. |
| 7. | 8. |
| 9. | 10. |

wish to participate in the said tender for the supply of

.....

As a Bank Guarantee against Bid Guarantee for sum of
of.....

..... (in words & figures) valid for (225) two
hundred and twenty-five days from.....

required to be submitted by the bidder as a condition for the participation, this Bank hereby
guarantees and undertakes during the above said period of (225) two hundred and twenty-five
days to immediately pay, on demand by the Executive Director Railway Stores (P), Ministry of
Railways, (Railway Board), New Delhi-110 001, INDIA, in writing the amount
of.....

.....(in words & figures) to
the said Executive Director, Railway Stores (P), Ministry of Railways, (Railway Board)
New Delhi-110 001, INDIA, and without any reservation and recourse, if:—

(i) the bidder after submitting his tender, modifies the rates or any of the terms
and conditions thereof, except with the previous written consent of the Purchaser; or

- (ii) the bidder withdraws the said bid within 180 days after opening of bid; or
- (iii) the bidder having not withdrawn the bid, fails to execute the contractual documents within the period provided in the contract; or
- (iv) having executed the contract fails to give the bonds so aforesaid within the period provided in the contract.

This guarantee shall be irrevocable and shall remain valid up to 4.00 P.M. on if further extension to this guarantee is required, the same shall be extended to such required periods on receiving instructions from M/s..... on whose behalf this guarantee is issued.

Date
Place
Witness

Signature:.....
Printed Name-,,.....
(Designation)

(Bank's Common Seal)

Annexure—6
(Please see clause-7.7 of
Instructions to Bidders')

PROFORMA FOR AUTHORITY FROM MANUFACTURERS

No..... Dated.....

To,

THE PRESIDENT OF INDIA,
acting through the Executive Director, Railway Stores (P),
Ministry of Railways, (Railway Board),
New Delhi-110001.

Dear Sir,

Subject.—Executive Director, Railway Stores (P), Ministry of Railways Tender
No.....,
we..... an established and reputable
manufacturers of.....having
factories at.....do hereby
authorize M/s.....,(Name and
address of Agents) to represent us, to bid, negotiate and conclude the contract on our behalf with
you against Tender No.....

No company/firm or individual other than M/s.....
are authorised to represent us in regard to this business against this specific tender.

Yours faithfully

,

(NAME)

for & on behalf of M/s.....
(Name of Manufacturers)

Note: This letter of authority should be on the Letter-Head of the manufacturing concern and should be signed by a **person** competent and having the power of attorney to bind the manufacture

Annexure-7

(Please see clause-15,1 of
Instructions to Bidders')

DETAILED OF SHIPPING ARRANGEMENTS OF LINER CARGOES IN RESPECT OF F.O.B./F.A.S. CONTRACTS FOR IMPORTS

1. Shipping arrangements will be made by the Ministry of Surface Transport (Chartering Wing), New Delhi (Cable :TRANSHART: NEW DELHI: Telex :VAHAN/IN-031-61157,61158,61159 FAX +91 11 23718614), through their respective forwarding Agents/Nominees as mentioned below, to whom adequate notice about the readiness of cargo for shipment should be given by the Sellers from time to time atleast six weeks in advance of the required position for finalising the shipping arrangements.

Area

Forwarding Agents/Nominees

(a) U.K. including Northern Ireland (also Eire), the North Continent of Europe (Germany, Holland, Belgium, France, Norway, Sweden, Finland and Denmark) and ports on the Continental Sea Board of the mediterranean, (i.e. French and Western Italian Ports) and also Adriatic Ports.

M/s. **Schenker & Co.**, 2000 Hamburg-11, FOB No. 110313 (Cable : SCHENKERCO HAMBURG) Telex : 217004-33 SHD 212675 Telephone No. 040/36135-0 FAX:

(b) U.S.A., Canada, Mexico & South America, Brazil

M/s. OPT Overseas Project Transport Inc., 46, SELLERS STREET, KEARNY, NEW JERSEY 07032, Tel. (201)998-7771
Telex : 673-3586 Fax (201) 988-7833

(c) Japan

The First Secretary (Commercial)
Embassy of India, Tokyo, Japan.
(Cable: INDEMBASSY TOKYO) Telex: INDEMBASSY J-24850
Telephone : 262 2391
FAX:

(d) Australia, Algeria, Bulgaria, Romania, Czech Republic, Slovakia, Egypt,

The Shipping Corporation of India Ltd., GDR 'Shipping House' 229/232 Madame Cama Road, Bombay-400 021 (Cable : SHIP INDIA BOMBAY), Telex: 31-2209 SCID IN' Telephone +91 11 232666, +91 11 232785

(e) Russia, Ukraine, etc. (CIS states)

-----do-----

(f) Poland

-----do-----

(g) Pakistan) Other areas not specifically mentioned above.

Shipping coordination Officer, Ministry of Surface Transport (Chartering Wing), New Delhi (Cable :TRANSHART: NEW DELHI: Telex :VAHAN/IN-031-

(h

2. BILLS OF LADING

The Bills of Lading should be drawn to indicate 'Shipper and Consignee' as under:—

SHIPPER; The Government of India

CONSIGNEE: As per consignee's particulars in the contract, (The name and address of the 'Port Consignee and Ultimate Consignee' should both be indicated).

3. Two non-negotiable copies of the Bill of Lading indicating the freight amount and discount, if any allowed, should be forwarded to the Shipping Co-ordination Officer, Ministry of Surface Transport, (Chartering Wing), Parivahan Bhavan, New Delhi after the shipment of each consignment is effected.

4. The Seller should avoid the use of over-aged vessels for the shipment of the goods under the contract and if so used, the cost of additional insurance, if any, shall be borne by the Seller.

Annexure-8

(Please see clause 15.1 of 'Instructions to Bidders').

PROFORMA FOR INDICATING PARTICULARS OF CARGOES FOR WHICH SHIPPING SPACE IS
REQUIRED
TO BE ARRANGED BY THE SHIPPING CO-ORDINATION AND CHARTERING ORGANISATION OF
THE MINISTRY OF SHIPPING

S. No.	
Name of the supplier with telegraphic/ postal address/Fax No.	
Name of the consignee with telegraphic/ postal address	
Description	
Quantity	
Cargo availability, whether shipload or parcel, if parcels, size of parcels	
Period over which shipment to be completed	
Loading Port	
Discharge Port	
Nature of contract, FOB or CFR	
Any special conditions in the contract relating to ship	

Signature and seal of Manufacturer/Tenderer

Note:-- This form should be filled in and sent (in duplicate) to the Chief Controller of Chartering (in respect of bulk cargoes) and the Shipping Co-ordination Officer (in respect of general liner cargoes), Ministry of Shipping, New Delhi, with a copy to the Executive Director, Railway Stores(P) Ministry of Railways, Railway Board, Rail Bhawan, New Delhi-110001, INDIA as soon as possible after the relevant contract is finalized

Annexure—9

*(Please see clause 2.3, 2.4 and 7.6 of
'Instructions' to Bidders)*

PROFORMA FOR STATEMENT OF DEVIATIONS

- (1) The following are the particulars of deviations from the requirements of the tender specifications—

CLAUSE	DEVIATION	REMARKS (Including-justification)
--------	-----------	--------------------------------------

- (2) The following are the particulars of deviations from the requirement: of the Instructions of Tenderers, General and Special Conditions of Contract—

CLAUSE	DEVIATION	REMARKS (Including-justification)
--------	-----------	--------------------------------------

*Signature and seal of
the Manufacturer/Tenderer*

Note.— Where there is no deviation the statement should be returned duly signed with an endorsement indicating "No Deviations".

Annexure—10

(Please see clause 20 of
'General Conditions of Contract')

**PROFORMA OF BANK GUARANTEE FOR CONTRACT
PERFORMANCE GUARANTEE BOND**

Ref.....

Date.....

Bank Guarantee No.....

To,
THE PRESIDENT OF INDIA.
acting through the Executive Director, Railway Stores (P)
Ministry of Railway,
(Railway Board). Rail Bhavan,
New Delhi-110001, INDIA.

1. Against contract vide Advance Acceptance of the Tender No.....
dated..... covering supply of.....
(hereinafter called the said 'contract') entered into between the President of India
and.....(hereinafter called the 'Contractor') this is to certify
that at the request of the Contractor we..... Bank Ltd.,
are holding in trust in favour of the President of India, the amount of.....
..... (write the sum here in words) to indemnify and keep indemnified
the President of India (Govt. of India) against any loss or damage that may be caused to or suffered
by the President of India (Govt. of India) by reason of any breach by the Contractor of any of the
terms and conditions of the said contract and/or the performance thereof. We agree that the decision
of the President of India (Govt. of India), whether any breach of any of the terms and conditions of
the said contract and/or in the performance thereof has been committed by the Contractor and the
amount of loss or damage that has been caused or suffered by the President of India (Govt. of
India) shall be final and binding on us and the amount of the said loss or damage shall be paid by us
forthwith on demand and without demur to the President of India (Govt. of India).

2. We.....Bank Ltd., further agree that
the guarantee herein contained shall remain in full force and effect during the period that would be
taken for satisfactory performance and fulfilment in all respects of the said contract by the
Contractor *i.e. till*.....(viz. the date up to 12 months after the
date of last shipment/delivery, of the goods ordered) hereinafter called the 'said date' and that
if any claim accrues or arises against us..... Bank Ltd., by virtue of this
guarantee before the said date, the same shall be enforceable against
us.....Bank Ltd.), notwithstanding the fact that the same is
enforced within six months after the said date, provided that notice of any such claim has been
given to us.....Bank/Ltd., by the President of India (Govt. of India) before
the said date. Payment under this letter of guarantee shall be made promptly upon our receipt of
notice to that effect from the president of India (Govt. of India).

3. It is fully understood that this guarantee is effective from the date of the said contract and
that we.....Bank Ltd., undertake not to revoke this guarantee
during its currency without the consent in writing of the President of India (Govt. of India).

4. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Contractor in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payments so made by us under this bond shall be a valid discharge of our liability for payment thereunder and the Contractor shall have no claim against us for making such payment.

5. We.....Bank Ltd., further agree that the President of India (Govt. of India) shall have the fullest liberty, without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said contract or to extend time of performance by the Contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by the President of India (Govt. of India), against the said Contractor and to for bear or enforce any of the terms and conditions relating to the said contracts and we.....Bank Ltd., shall not be released from our liability under this guarantee by reason of any such variation or extension being granted to the said Contractor or for any forbearance and/ or omission on the part of the President of India or any indulgence by the President of India 10 the said Contractor or by any other matter or thing what-so-ever, which under the law relating to sure lies, would, but for this provision have the effect of so releasing us from our liability under this guarantee.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

Date.....

Signature.....

/Voce.....

Printed Name.....

Witness.....

***.....
(Designation)***

***.....
Bank's Common Seal***

PROFORMA OF BANK GUARANTEE FOR 10% CONTRACT VALUE TOWARDS WARRANTY GUARANTEE

To,
THE PRESIDENT OF INDIA,
acting through the Executive Director, Railway Stores (P),
Ministry of Railway,
(Railway Board), Rail Bhavan, Raisina Road,
New Delhi-110001, INDIA.

Sub.— Guarantee No.....for..... (Amount).
Covering equipment (s) Serial no.....supplied
to.....(Consignee/s)

Ref.— Contract
No.....dated.....
Placed on M/s.....

1. WHEREAS M/s.....one of our
constituents,
(hereinafter called the "Sellers") have agreed to sell to you (hereinafter referred to as the
"Government") Nos. of..... (give
description) as per contract
No.....
dated.....(hereinafter called "the said contract")

2. AND WHEREAS according to the terms of said contract, it has been stipulated that
payment of 10% of the value of the stores would be made, provided that the Sellers
furnish to the Purchaser a Bank Guarantee from a recognised bank, acceptable to the
Purchaser for 10 per cent of the value of the said contract, valid for a period covering in
full the Guarantee Period as per the warranty clause of the said conditions of the
contract, being the conditions attached to and forming part of the said contract.

3. AND WHEREAS the Sellers have approached us to give the said Bank Guarantee on
their behalf in your favour for an amount representing 10 per cent of the value of (the said
contract which you have agreed to accept.

4. That in consideration of the promises and at the request of the said Sellers, we
hereby irrevocably undertake and guarantee to pay to the Government of India or at
such other place as may be determined by you forthwith on demand and without
any demur, any sum upto a maximum amount of..... representing 10
per cent of the value of the stores despatched under the said contract in case the
Seller make default in paying the said sum or make any default in the performance,
observance or discharge of the guarantee contained in the said contract.

5. We agree that the decision of the Government, whether any default has occurred
or has been committed by the Sellers in the performance, observance or discharge of the

guarantee aforesaid shall be conclusive and binding on us
M/s.....
.....

6. Government shall be at liberty, from time to time, to grant or allow extension of time or give other indulgence to the said Sellers or to modify the terms and conditions of the contract with the said Sellers without affecting or impairing this guarantee or our liability hereunder.

7. We undertake to pay to the Government any money so demanded notwithstanding any dispute or disputes raised by the Sellers in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal. We also undertake to pay to the Government any money so demanded against the Purchaser's claims in any other contracts placed on (he said sellers.

The payment so made by us under this bond shall, be a valid discharge of our liability for payment **thereunder** and the Sellers shall have no claim against us for making such payment.

8. This bank guarantee comes into force when the balance ten percent of the value of the stores, shipped per Vessel.....vide Bill of Lading No..... dated..... or R/RNo.....dated..... (in the case of indigenous contracts) under the said contract, has been paid and will remain in full force and effect up to.....*i.e.* for.....months counted from the dale of placing the stores in service, and shall continue to be enforceable for further five months *i.e.* up to.....(date), hereinafter called the said date.

9. This guarantee will not be discharged due to the change in the constitution of the Bank or the Sellers.

10. That no claim under this guarantee shall be entertained by us unless the same has been preferred by the Government within the said dale.

Date.....

Signature.....

Place.....

Printed Name.....

Witness.....

(Designation).....

Bank's Common Seal

Government of India
Ministry of Railways
(Railway Board)

SEAL

INDIAN RAILWAY

STANDARD SPECIFICATION

FOR

AXLES FOR DIESEL AND ELECTRIC LOCOMOTIVES, EMU
MOTOR COACHES AND POWERED AXLES
OF RAIL CARS

(Applicable to all Gauges)

Serial No. R-43-92 (with Cor. No. 1)

0. FOREWORD:

0.1 This Specification is issued under the fixed Serial No. R-43; the final number indicates the year of original adaptation as standard or, in the case of revision, the year of last revision.

ADOPTED, 1969; REVISED, 1992

0.2 This specification was originally issued to cover the requirements of motor driven axles of Diesel and Electric Locomotives, EMU motor coaches and powered Axles of Rail Cars. It has been revised to cover the requirement of Cardan shaft driven axles of Diesel Hydraulic Locomotives and Rail Cars also.

0.3 The requirements of axles for Steam Locomotives and tenders are covered by IRS Specification No. R-18.

1. SCOPE:

1.1 This standard covers the requirement of the following two categories of straight steel axles.

Category - A : Motor driven axles of Diesel and Electric Locomotives, EMU Motor Coaches and Rail Cars.

Category - B : Cardan Shaft driven axles of Diesel Hydraulic Locomotives and Rail Cars.

2. STEEL MAKING PROCESS:

2.1 Axles of Category-A shall be manufactured from steel made by Open Hearth, Electric, Basic Oxygen or a combination of these processes. The steel shall be of killed quality. In case basic Oxygen process is used:-

2.1.1 Nitrogen content of steel determined by analysis of finished product shall not exceed 0.007%.

...2/-

2.1.2 Hydrogen content of the steel determined by analysis of finished product shall not exceed 2 PPM.

2.1.3 The manufacturer shall furnish full details of the steel making process, including subsequent refining and prior approval taken from the purchaser for use of Basic oxygen or LD steel for manufacturing of the axles.

2.2 Axles of Category-B shall be manufactured from steel conforming to Grade 25 Cr Mo4 to DIN 17200* - Nov., 1984.

2.3 Chemical Composition:

2.3.1 Ladle Analysis :-

The chemical composition of steel shall be as under when analysed in accordance with IS:228** or any other established instrumental/chemical method. In case of dispute, the procedure given in the relevant part of IS:228 shall be the reference method. However, where the method is not given in IS:228 and its relevant parts, the reference method shall be as agreed to between the purchaser and the manufacturer.

<u>Contents</u>	<u>Category-A</u>	<u>Category-B</u>
Carbon	0.40 - 0.55%	0.22 - 0.29%
Manganese	0.60 - 0.90%	0.60 - 0.90%
Sulphur	0.05% max.	0.030% max.
Phosphorus	0.045% max.	0.035% max.
Silicon	0.15% Min.	0.15 - 0.40% max.
Chromium	-	0.90 - 1.20%
Molybdenum	-	0.15 - 0.30%

2.3.2 Check Analysis:-

Permissible variation in case of check analysis over the limits specified in Clause 2.3.1 shall be as under:-

<u>Contents</u>	<u>Category-A</u>	<u>Category-B</u>
Carbon	$\pm 0.03\%$	$\pm 0.02\%$
Manganese	$\pm 0.03\%$	$\pm 0.04\%$
Sulphur	$+ 0.005\%$	$+ 0.005\%$
Phosphorus	$+ 0.005\%$	$+ 0.005\%$
Silicon	$- 0.02\%$	$+ 0.03\%$
Chromium		$\pm 0.05\%$
Molybdenum		$\pm 0.03\%$

* Quenched and Tempered steels - (Technical delivery condition).

** Method of analysis of steel.

...3/-

NOTE: The variations may occur either below or above the individual element ranges but shall not be applied both above and below the specified range for any one element in any one cast of steel.

2.4 Discard:

Sufficient discard shall be made from either end of each ingot to ensure freedom from piping and harmful segregation.

3. MANUFACTURING PRACTICES :

3.1 The forged axles shall be manufactured from ingots rolled down to bloom size but shall be finally shaped to profile by forging only under a hammer or press. The forging profile shall generally follow the contour of the rough machined axles (as given in relevant drawings) with adequate machining allowances. The minimum cross section of ingot shall not be less than twice the maximum cross section of bloom and minimum cross section of bloom shall not be less than twice the maximum cross section of axle.

3.2 In case the axles are manufactured direct from ingots by forging under a hammer or press only, the minimum cross section of the ingot shall be not less than three times the maximum cross section of the axles. The forging profile shall be as described in Clause 3.1 above.

3.2.1 Axle can also be manufactured with a lower reduction ratio of forging provided the minimum section of the bloom is at least 1.5 times the maximum section of the axles and the minimum section of the ingot is at least five times the maximum section of the rolled/forged axles.

3.3 Cooling:

3.3.1 When hot blooms are cooled, they shall be allowed to cool uniformly and shall not be permitted to come in contact with water or draft of air.

3.3.2 The cooling of axles after forging operation shall be controlled by a suitable method as mutually agreed to between the Purchaser and Supplier.

3.4 Heat Treatment :

While Category - A axles shall be either normalised or oil hardened and tempered, Category-B axles shall be oil hardened and tempered to achieve the desired mechanical properties.

4. QUALITY OF MATERIAL:

4.1 The axles shall be sound throughout and without cracks, inclusions, flows, burrs, lack of metal, laps or any harmful defect detrimental to their functions and shall be supplied to the prescribed dimensions and tolerances.

5. BRANDING:

5.1 Each axle shall be legibly stamped after forging at a suitable location for identification. The axles after machining, shall be stamped with an

identifying cast number, manufacture's code, month, year of manufacture and such other marks as may be shown on the drawings or otherwise specified by the Purchaser. The branding shall be with the letters of at-least 6 mm in height.

6. SELECTION FOR TESTS :

6.1 The axles shall be submitted in identifiable batches of a maximum of 60, each batch containing axles from only one cast and heat treated in a similar manner. The selection for testing as specified in clause 7 shall be at the rate of one axle per batch or part thereof.

6.2 If less than 15 axles are made from one cast of the same heat treatment batch, the test requirements shall be either:-

6.2.1 One axle tested in accordance with clause 7.

or

6.2.2 The manufacturer shall leave an extra length of the same diameter as that of forged end of the axle on 50% of the axles (subject to a minimum of 5 nos.) so as to enable the Purchaser or his Inspecting Officer to select and cut one such coupon for tensile test, cold bend test, Charpy Impact test and macro-examination as specified in clauses 7.2, 7.3, 7.4 and 9.4 respectively.

6.3 The Purchaser or the Inspecting Officer shall select and test such of the axles as he may think proper to the extent of the number specified above. Proper cast identification shall be maintained at the ingot and bloom stages. The axles tested shall be correlated and considered to represent the average quality of the axles of the lot produced from the same cast from which they were selected. After selection of the axles for testing, each test axle shall comply with the following tests without further re-heating or any other manipulation whatsoever, either of the axle selected for testing or any portion selected therefrom to prepare the test pieces.

7. MECHANICAL TESTING :

7.1 From the test piece selected in accordance with clause 6, following test pieces shall be cold machined in the longitudinal direction. The test pieces shall be taken from the wheel seat location of the axle or the test prolongation as the case may be as shown in Fig. 1.

7.1.1 Tensile test piece shall be round and of standard proportion in accordance with IS:1608*, having a gauge length equal to $5.65\sqrt{A}$, where A is cross sectional area of the test piece.

7.1.2 The cold bend test piece 250 mm x 32 mm sq. with corners rounded off with 1.6 mm radius, shall be machined from positions adjacent to tensile test piece.

7.1.3 Charpy Impact test piece shall be of square section, 10 mm x 10 mm,

in accordance with IS:1499**. The depth of 'U' notch shall be 5 mm.
(SEE FIG.1)

7.2 Tensile Test:

Tensile test shall be carried out in accordance with IS:1608.
Tensile strength, yield stress and percentage of elongation obtained from the test piece shall be as follows:-

	<u>Category-A</u>	<u>Category-B</u>
7.2.1 Tensile Strength	570 N/sq.mm (Minimum)	650 N/sq.mm (Minimum)
	685 N/sq.mm (Maximum)	800 N/sq.mm (Maximum)
Yield Stress	Not less than 50% of Tensile Strength.	400 N/sq.mm (Minimum)
Elongation	Minimum of 21% and 17% corres- ponding to 570 and 685 N/sq.mm tensile strength respectively.	18% Minimum
Reduction in Area after fracture % min.	-	60%

7.2.2 Intermediate elongation shall correspond to tensile strength occurring within the permissible range.

7.3 Cold Bend Test:

Cold bend test piece(7.1.2) shall be bend cold by direct pressure from a tool 50 mm wide and having 50 mm diameter at the thrust end, until the sides of the test piece are parallel. The test piece shall not show any sign of fracture.

7.4 Charpy Impact Test:

Charpy Impact (U-Notch) test can be carried out in lieu of cold bend test in accordance with IS:1499. The minimum impact strength obtained shall be:-

<u>Condition</u>	<u>Category-A</u>	<u>Category-B</u>
Normalised	KU 20J	-
Hardened and tempered.	KU 35J	KU 40J

* Method of Tensile Testing of Steel product.

** Method for Charpy Impact Test (U-Notch) for metals.

....6/-

8. TEST BY CHEMICAL ANALYSIS:

8.1 The sample shall be taken for analysis by the Purchaser or the Inspecting Officer from one axle from every cast, or from one axle in every 60 in case there are more than that number in the cast or as specified in clause 6.2.2 if less than 15 axles are made from one cast. The chemical analysis shall be carried out in accordance with IS:228.

9. OTHER TESTS:

9.1 Magnetic Particle Test:

All axles (in proof machined or fully machined and heat treated condition) shall be tested by the Magnetic Particle Method both in longitudinal and circular magnetisation/shall not reveal any harmful surface defects. The axles revealing harmful surface defects shall be rejected.

9.2 Ultrasonic Test:

All axles conforming to the stipulation of clauses mentioned above shall be subjected to Ultrasonic test and those passing the test shall be accepted. The method of testing and acceptance standards shall be as given in Appendix-A.

9.3 Microscopic Examination:

9.3.1 The transverse section of the gripping portion of tensile test piece shall be examined under microscope. The test piece of Category-A axle in normalised condition shall generally show well defined uniform fine grained structure comparable with ASTM grain size No.8 and shall not be coarser than grain size No. 6.

The test piece of Category-A axles in hardened and tempered condition and Category-B axle shall show well defined fine tempered martensite structure and shall not show undesirable ferrite patches.

9.3.2 Longitudinal section of the gripping portion of tensile test piece on microscopic examination shall not show any banding.

9.3.3 A specimen, representing each size classification per cast and per heat treatment batch shall be selected for microscopic examination from the tensile test specimen. The specimen for microscopic test shall be cut from the large undistorted portion of the tensile test specimen in such a way as will give a face transverse to the axis of the axle.

9.4 Macro Examination:

9.4.1 Macro-examination shall be conducted on the transverse cross section of the representative sample cut from the test prolongation (extra length) of the axle selected as per clause 6, by deep etching in 50% hydrochloric acid. The section of the sample if taken from the axle shall be from the thickest portion.

9.4.2 Sample shall not show presence of harmful defects such as remnant of piping, harmful segregation and non-metallic inclusions etc.

9.4.3 The sampling plan for macro examination shall be one test per cast per heat treatment batch.

10. ADDITIONAL TESTS:

10.1 If so desired by the Purchaser/Inspecting Officer, sulphur prints of the transverse sections cut from the test prolongation (extra length) or the axle selected as per clause 6 shall be carried out to ensure freedom from sulphur segregation and other defects. The sample shall be free from harmful segregation, inclusions etc.

11. RE-TESTS:

11.1 Should a tensile, cold bend test or impact test piece fail to meet the requirements of cl. 7 or micro-structure be found unsatisfactory and the purchaser or the Inspecting Officer considers that the fractured test piece or its micro-structure does not fairly represent the quality of the batch, two further test pieces shall be taken for repeating the test in respect of the same batch in which failure occurred. As an alternative to double re testing or should either retest fail to meet the requirements, the batch of axles together with the test samples, may, with the agreement of the Purchaser or Inspecting Officer, be re-heat-treated and re-submitted for testing in accordance with clause 6.

11.2 In case of axles re-heat-treated to meet the requirement of Ultrasonic test (longitudinal Penetration), as stipulated in Appendix A, clause A-6.1.5, they shall be resubmitted for testing in accordance with clause 6.

11.3 The axle shall not be re-heat-treated more than twice over and above the original heat-treatment.

12. MACHINING OF AXLES:

12.1 Axles shall be delivered rough turned or machined to drawings as required by the Purchaser. The rough turned/machined portion shall be concentric with the unmachined portion of the axle. The axles shall be free from injurious tool marks.

12.2 Axles shall be roller burnished at portions, if so specified on the relevant drawings, by the following process:-

12.2.1 Turned with fine feed and subsequently burnished by revolving hardened rollers.

12.2.2 Turned, ground and then burnished by revolving hardened rollers.

12.2.3 Turned with a skin cut using a broad-faced spring tool with a suitable lubricant and then burnished by revolving hardened rollers.

12.3 lathe Centres:

Permanent lathe cent smooth and accurately machined and truly in

line with the centre of the axle, shall be provided in the ends of the axle. The centres shall be of the form shown in figure below. The included angle shall be 60 deg. unless otherwise specified.

----- SEE FIG. 2.) -----

13. SAMPLE AXLE:

13.1 A sample axle of each kind, finished complete, shall be approved by the Purchaser or the Inspecting Officer before the general execution of the order is proceeded with and the whole supply must be in accordance with the approved sample (s).

14. INSPECTION:

14.1 The Purchaser or the Inspecting Officer shall have free access to the works of the manufacturer at all reasonable times; he shall be at liberty to inspect the manufacture at any stage and to reject any material that does not conform to the terms of this Specification. The Purchaser or the Inspecting Officer shall have the power to mark or deface in some easily distinguishable manner all rejected axles, but they shall not be marked or defaced in such a manner as to render them unsaleable to other parties.

14.2 Power shall be reserved to the Purchaser or the Inspecting Officer to be present at, and take such part as he thinks fit, in all tests such as macroscopic examination, sulphur print test and microscopic examination etc. which the manufacturer may carry out for his own purpose or under the terms of this specification, both of the axles and of their materials, in all stages of manufacture.

15. TESTING FACILITIES:

15.1 The manufacturer shall supply the material required for testing free of charge, and shall, at his own cost, furnish and prepare the necessary test pieces, and supply labour and appliances for such testing as may be carried out in his own premises in accordance with this specification. Failing facilities at his own works for making the prescribed tests, the manufacturer shall bear the cost of carrying out the tests elsewhere.

16. GUARANTEE:

16.1 The axle shall be guaranteed by the supplier for four years against any defect imputable to the manufacture and not revealed during acceptance at the works.

16.2 This period shall be calculated from the end of the month stamped on the axle.

16.3 In case of axles for new vehicles, the delivery date of the vehicles to which they are fitted shall be regarded as the date of delivery of axles.

16.4 Axles, which, during the guarantee period show defects making them either unfit for service or reducing their period of service, will be rejected.

16.5 When two axles from the same cast have failed in service, or when more than 5% of the axles from the same cast revealed defects within the above conditions the Purchaser shall have the right to reject the whole of the cast.

16.6 Rejected axles shall be made available to the supplier with a view to their replacement or reimbursement.

17. PROTECTION AND PACKING:

17.1 After inspection and approval, the axles shall be carefully protected with three coats of bituminous paint to IS:152* or with any other approved anti-rust compound, easily removable with kerosine or white spirit, allowing sufficient drying time between each coat. After the coat has dried, the journals, wheel and gear seats, wherever relevant, shall be covered with water proof paper and gunny cover tied with jute string. The journals, wheel and gear seats shall, then be further protected with well fitted and tightly bound wood lagging or by any other approved material. The wood used shall be dry and shall be held in place either by hoop iron bands or by steel wire not less than 1.6 mm in grooves cut in the periphery of the protecting wood pieces.

17.1.1 For roller bearing axles; the ends shall be protected by mild steel plate about 5 mm thick and 25 mm larger than journal diameter screwed or secured in position by a method approved by the Purchaser or the Inspecting Officer.

17.2 Axle middle except for gear seat locations of finished axles shall be painted with one coat of zinc chromate primer to IS:2074* followed by a second coat of black Japan to IS:341**, proper time for drying shall be allowed between the coats. All parts must be cleaned and free from rust and moisture at the time the coating is applied.

* Ready mixed paint, brushing, stoving, lead free, for general purpose, colour as required.

* Ready mixed paint, red oxide-zinc chrome, Priming.

** Black Japan:- Type A, B & C.

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APPENDIX-A
(Ref : Clause 9.2)

Ultrasonic Inspection of New rough turned axles for Railway
Rolling Stock (Traction & Trailing) - Method of Testing and
Acceptance Standard.

A-1 SCOPE

The method of testing and the acceptance standard set out hereunder shall be used to evaluate all types of new axles of railway rolling stock (locomotive, EMU, Carriage & Wagon) as stipulated in the relevant IRS Specification for axles.

A-2 PURPOSE

The axles shall be evaluated for

A-2.1 End-face to end-face penetrability

A-2.2 Detecting discontinuities which may be harmful to the axle service.

A-2.3 Longitudinal discontinuity detection

A-3 EQUIPMENT

A-3.1 The instrument used must be of the pulse echo type.

A-3.2 The instrument shall be operated at 2 to 2.5MHz for penetrability test, transverse discontinuity detection and longitudinal discontinuities.

A-3.3 The instrument may be used with various types of transducers namely, Bariumtitanate, PZT, Lead metaniobate etc. of 20 to 26 mm dia or equivalent area probe, at the option of the axle manufacturer. Other types and sizes of transducers of similar response capability as those described may be used with the approval of the inspecting authority.

A-4 STAGE OF INSPECTION

A-4.1 The axles shall be ultrasonically inspected after the stipulated heat treatment and machining of the end faces to a finish better than 6.35 μ m.

A-5 INSTRUMENT SENSITIVITY

A-5.1 The instrument sensitivity shall be adjusted with the help of a reference block manufactured from an axle forging in the normalised condition, and conforming to the relevant IRS specification for axle. The block shall be approximately 406 mm long. The two end faces shall be machined parallel to a finish better than 6.35 μ m. The reference standard shall be a flat-bottom 3.2 mm dia. hole drilled perpendicular to one of the end faces at mid-radius to a depth of about 25 mm such that the flat bottom of the hole shall be located at a distance of 381 mm from the other end face.

:2:

A-5.2 Using the reference block the sensitivity of the equipment shall be adjusted to give an echo amplitude of about 12.5 mm from the reference hole when probed from the opposite end face.

A-6 SCANNING

A-6.1.1 Longitudinal penetration (end-face to end-face)

A-6.1.1 With the sensitivity setting, as described in clause A-5 above, axles when scanned manually or by automated inspection techniques from one end face, shall produce a minimum of 25 mm back reflection from the opposite end face.

A-6.1.2 The scanning shall be done from both the end faces of axles.

A-6.1.3 Axles which do not meet the above requirements shall be rejected. However, the manufacturer may, by mutual agreement with the Purchaser/Inspecting Officer, re-heat-treat the axles and re-submit for this test. Re-heat-treated axles shall conform to the stipulations of "Re-test" clause in the relevant IRS Specification for axles.

A-6.2 Discontinuity Detection

A-6.2.1 With the sensitivity setting as described in Clause A-5 the instrument shall be capable of detecting in reference axle pieces, flat bottom holes of sizes and at distances indicated in the following table:-

Distance in mm	380	750	Over 750
Dia. of flat bottom hole(mm)	3.2	6.4	9.5

A-6.2.2 The depth range of the instrument shall be set to cover half the length of axle under test. The axles shall be scanned alternatively from both the end faces covering the maximum end face area possible either by manual or automated inspection techniques.

A-6.2.3 The axles shall not show any discontinuity indication exceeding the levels obtained from reference flat bottom holes of sizes for the various zones, as indicated below:

Permissible Size of Discontinuity (Max.)

Zone	I	II	III
F.B. Hole (dia)	3.2 mm	6.4 mm	9.5 mm

Note:- Please see fig. 1a, 1b & 1c for identification of the zones.

....3/-

A-6.2.4 The amplitude of all discontinuity indications shall be evaluated with respect to distance from the test surface by utilising either an in-built Distance Amplitude Correction electronic device if provided in the instrument or by establishing Distance Amplitude Curves (DAC) for the specific instrument and transducer as described in Clause A-7 below.

The gain/attenuator control setting shall be the same as used for the respective zone for establishing DAC.

A-6.2.5 Axles under test shall be rejected if the amplitude of any discontinuity indication exceeds the levels indicated in Clause A-6.2.3, read with the Corresponding DAC for the respective zone.

A-6.3 Longitudinal discontinuity detection.

A-6.3.1 With sensitivity setting as described in Clause A-5 above, axles when scanned manually or by automated inspection technique by placing the normal probe, fitted with perspex piece having diameter of curvature to match the diameter of the axle, on the body of the axles, shall not produce any intermediate signal in between initial and back signal obtained from the other end of the diameter of the axle, suggestive of longitudinal discontinuity. (The perspex thickness should be such that the back wall echo should not be less than full screen height).

The axle shall be tested throughout the length and no intermediate echo should appear between initial and back wall echo.

A-6.3.2 Axles which do not meet the above requirement shall be rejected.

A-7 Distance Amplitude Correction (DAC)

A-7.1 The amplitude of ultrasonic indication for a given discontinuity size varies with the distance from the test surface. It is, therefore, necessary to have either an in-built electronic distance amplitude correction device or establish DAC for the particular type of axle. Because the distance amplitude relationship is influenced primarily by the ultrasonic equipment and transducer, it is necessary to establish the DAC for the specific equipment and transducer combination used.

A-7.1.1 For establishing DAC for the three zones, indicated in fig.1, four or more reference axle cut pieces for each zone with progressively varying lengths and with the relevant size of flat bottom hole drilled perpendicular to one of the end-faces on each piece may be used and the distance amplitude curve drawn for each zone for the particular type of axle to be tested. However, where more than one type of axle is to be tested, a common DAC could be established for axles having close geometry.

A-7.1.2 An alternate method would be to start with an axle piece equal to half the length of the axle under test with the three sizes of flat-bottom holes, viz. 3.2, 6.4 and 9.5 mm dia. respectively, drilled perpendicular to one of the end-faces and at mid-radius suitably dispersed around the centre. Scanning should be done from the other end face and the amplitude

of the indications noted down. Scanning shall be continued after progressively slicing the axle from the testing end. From the amplitude indications and the distance, the DAC could be drawn for each zone, and for the relevant reference holes.

A-7.1.3 An example of establishing a typical DAC as per above two methods is given in fig. 2a & 2b.

A-8 REJECTION

A-8.1 For end-face to end-face penetrability test, see clause A-6.1.1 and clause A-6.1.3.

A-8.2 For discontinuity test, see clause A-6.2.5.

A-8.3 For longitudinal discontinuity see Cl. A-6.3.2

A-8.4 Spurious echoes attributable to the geometry of the axle or ground noise of the instrument shall not be a cause for rejection.

A-9 MARKING:

Axles that conform to the above ultrasonic stipulation shall be stamped 'UT' on the end face which contains the axle identification marks, adjacent to heat number or Sl.No.

Corrigendum No. 1 of January, 2000
To
Indian Railway Standard Specification
For
Axles For Diesel And Electric Locomotives, EMU Motor Coaches And Powered
Axles Of Rail Cars (Applicable to all gauges).
Serial No.R-43/92

1. (Page 6, clause 9.1)

Add "The acceptance standards shall be as given in Appendix-B" at the end of the paragraph.

2. (Page 3 of Appendix A, Clause A-6.3, A-6.3.1, A-6.3.2). The existing clauses A-6.3, A-6.3.1 & A-6.3.2 shall be deleted and replaced with the following:-

***A-6.3.Longitudinal Discontinuity Detection**

A-6.3.1. Depth range calibration – The ultrasonic flaw detector is to be calibrated for 400 mm depth range (longitudinal wave) with the help of a piece of wheel seat of one of the axles of type to be tested or piece of any other axle of approximately 260 mm diameter, conforming to IRS-R-43. The approximate thickness of axle piece will be 150 mm. A 3.2 mm diameter flat bottom hole of length 25 ± 2 mm shall be drilled such that axis of the hole passes through the centre of the axle. The sketch of standard block thus to be made is given in fig. 3. One normal (0°) probe fitted with perspex block having concave curvature of diameter approximately corresponding to the axle diameter shall be used. Place the probe on the periphery of the axle piece at a location away from the flat bottom hole. Adjust the depth & delay control knob of the flaw detector so that on-set of the back-wall echo from opposite surface shall appear at approximately 6.5 horizontal main scale division such that each division corresponds to 40 mm for longitudinal wave.

A-6.3.2. Sensitivity Setting:- Place the 0° probe fitted with perspex to the diametrically opposite side of the flat bottom hole. An echo at approx. 6.0 horizontal scale division will appear on the screen. Adjust the gain level to achieve the echo height to 60% of the vertical scale. This gain level should not be changed during actual testing of axle.

A-6.3.3. Acceptance criteria:- No flaw echo with an amplitude of 60% or more in conjunction with the following shall be permitted.

- a) Flaw of any length located between surface and mid radius of the axle as shown in fig. 4.
- b) Any longitudinal defect of length 75mm or more located in the body of the axle or 50mm or more under wheel seat, journal region & gear seat.
- c) Minimum distance of 200 mm or less between two successive isolated defects.
- d) More than 3 such isolated defects exist throughout the axle.'

3. (Page 4 of Appendix A)

Add new Appendix B after existing Appendix A.

“APPENDIX-B

Acceptance Limit of Surface And Sub-Surface Defects In Locomotive Axles
(Clause 9.1 of IRS: R-43-92)

Nature of defects:- seams, hairlines, stringers, shadow, ghost lines etc.
Stage/Condition for examination :- Proof machined or fully machined.

B. 1. Imperfections not acceptable:-

- a). On any part of axle:
Transverse/ circumferential seams, cracks or laps of any depth (indeterminate) on axle surface.
- b). On machined fillets:
Besides above, longitudinal discontinuity (hairlines, stringer, fine seam) in machined fillets are not acceptable.

B. 2. Acceptable limits of other discontinuities:

- a) Journals:
Fine longitudinal discontinuities on surface (hairlines, stringer, fine seams) if
 - i) not extended on fillets
 - ii) less than 12 mm individually.
 - iii) Total length of imperfection of 6-12 mm size not exceeding 40 mm.
 - iv) Not more than 2 defects of 6-12 mm within 75 mm.
 - b) Wheel & Gear seats:
Longitudinal discontinuity (hairlines, stringers, fine seams, tight seams) if,
 - i) not present within 40 mm of wheel/gear seat ends.
 - ii) Individually not more than 12 mm.
 - iii) Total length of discontinuities (6-12 mm) not more than 75 mm.
 - c) Body:
Longitudinal discontinuities (hairlines, stringer, fine seams) if,
 - i) Not extended to fillets of wheel/gear seat.
 - ii) Individually not more than 12 mm
 - iii) Total length of discontinuity not to exceed 40 mm in any 300 mm.
 - iv) Discontinuity more than as indicated in (ii) & (iii) above to be reconditioned.”
-

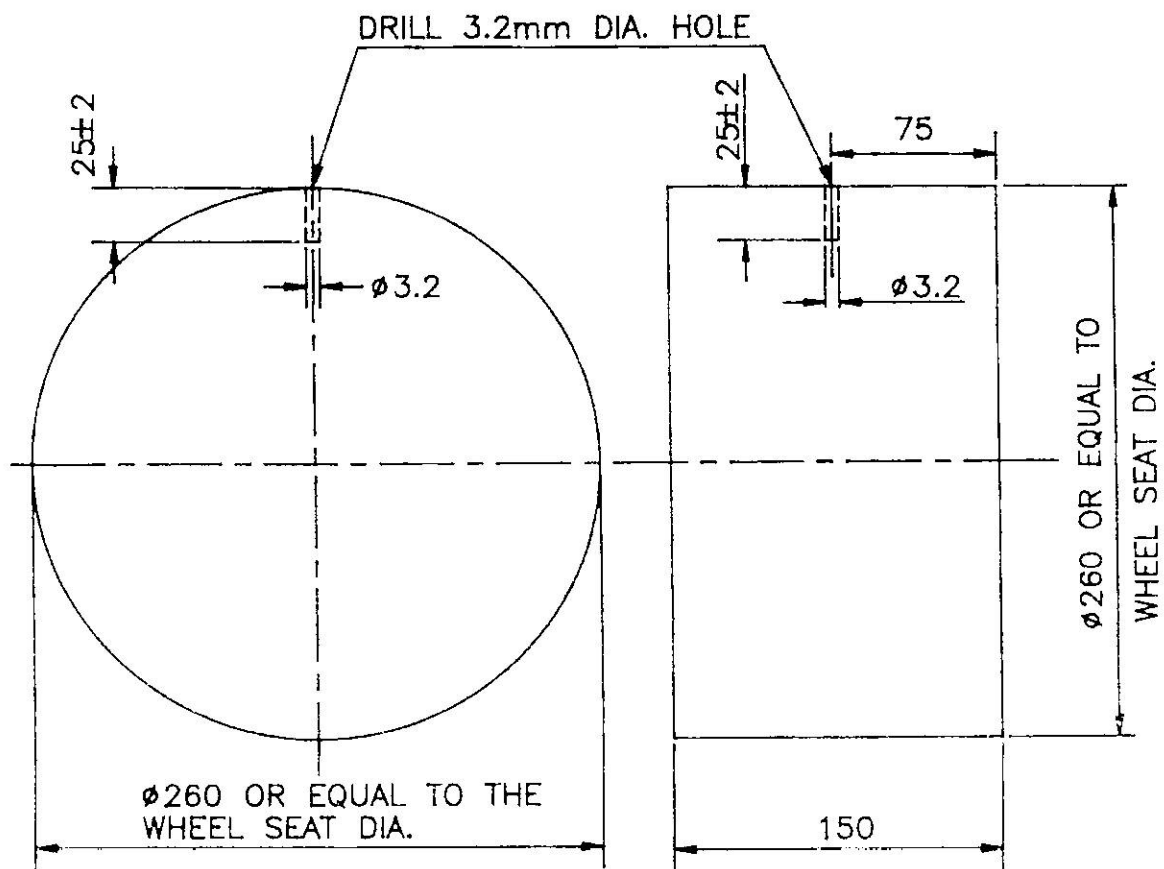
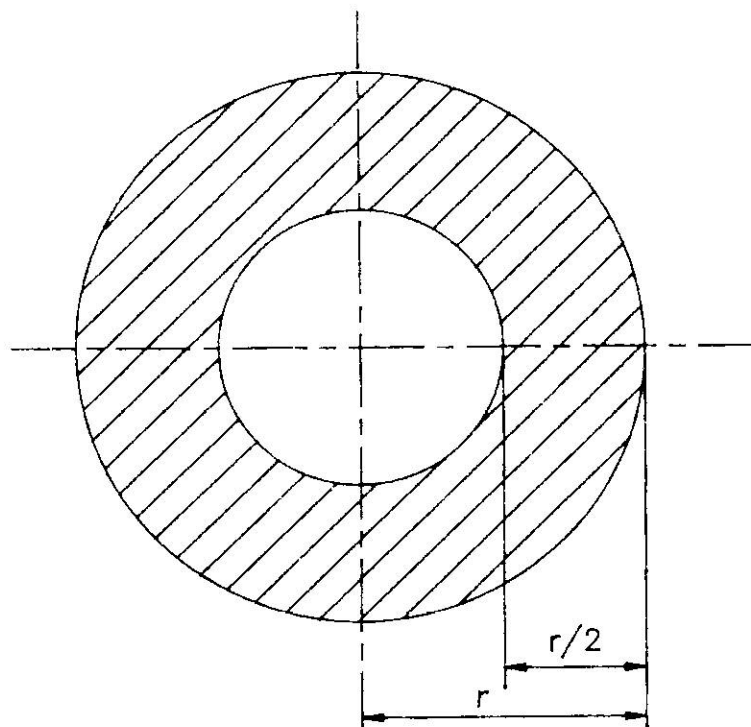


Fig.—3 [CLAUSE A-6.3.1]



DEFECT WITH AMPLITUDE OF 60% OR MORE FOR ANY LENGTH IN SHADED ZONE IS CAUSE FOR REJECTION.

Fig.—4 [CLAUSE A-6.3.3(a)]

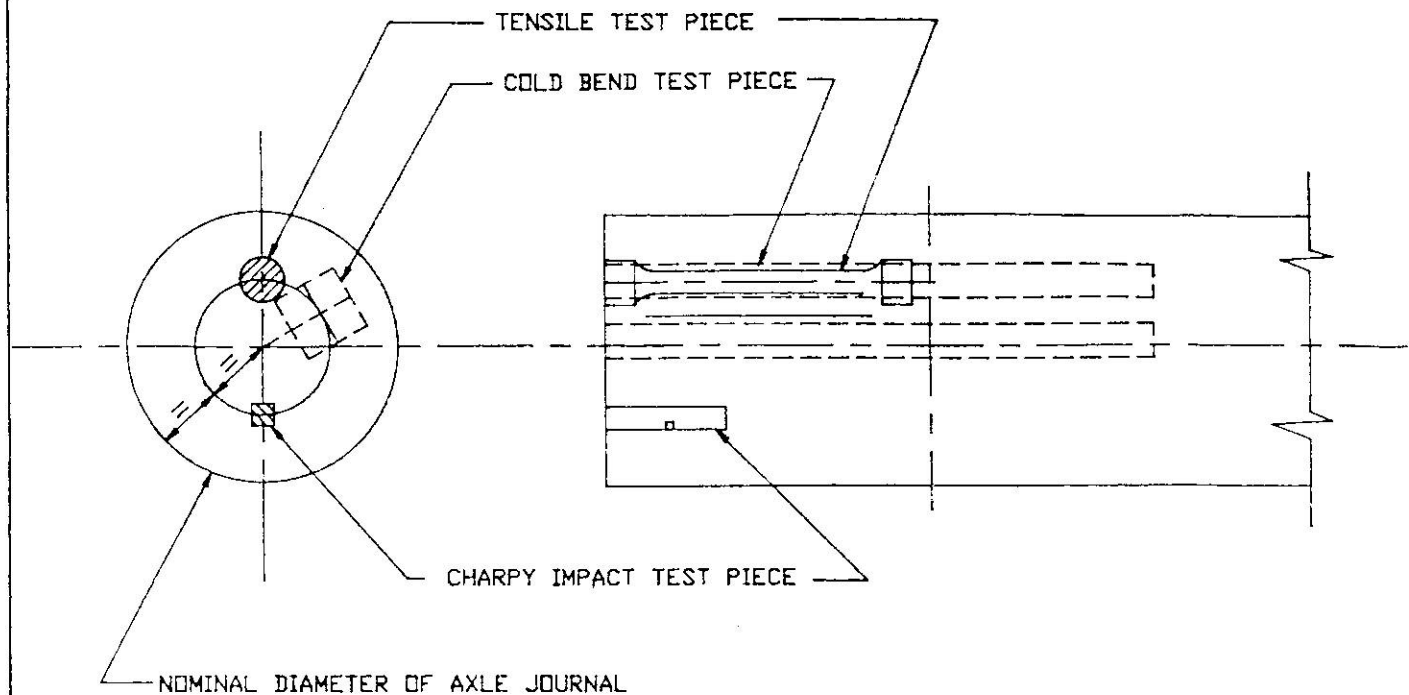


FIG.-1

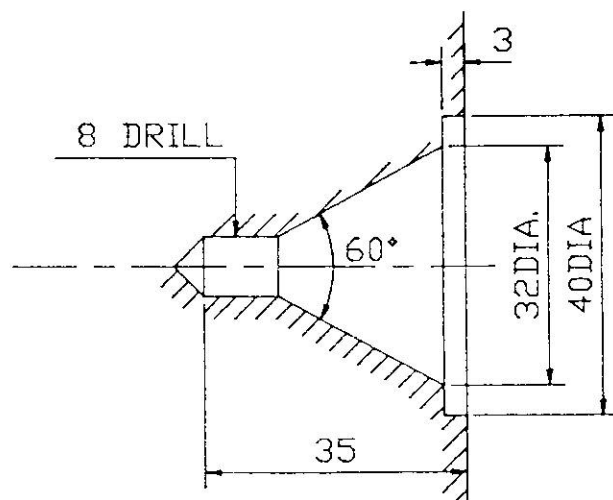


FIG.-2

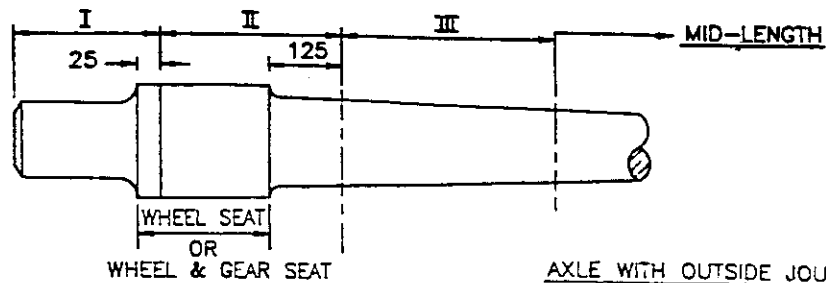


FIGURE-1a

AXLE WITH OUTSIDE JOURNAL
ALL TYPES (PLAIN/ROLLER BEARING)

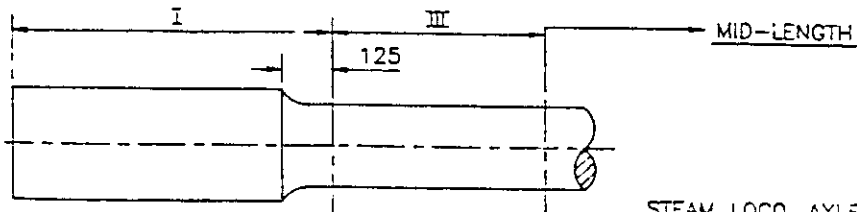


FIGURE-1b

STEAM LOCO. AXLE
(PLAIN/ROLLER BEARING)
TYPE-B

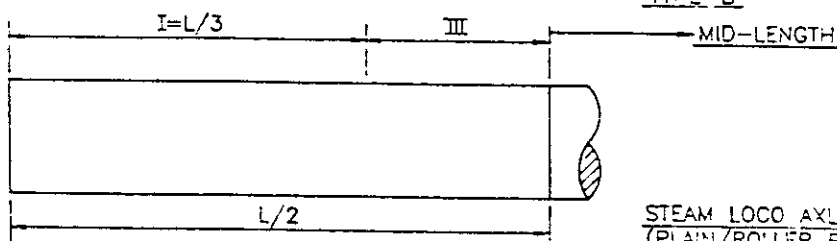


FIGURE-1c

STEAM LOCO AXLE
(PLAIN/ROLLER BEARING)
TYPE-A

FIG. 1a, 1b & 1c:- ZONE DEMARCATION FOR ULTRASONIC TESTING
OF ROUGH-TURNED PROCURED AXLES
(TO BE READ ALONG WITH THE RELEVANT AXLE DRAWING)

FIGURE-2d

FIGURE-2b

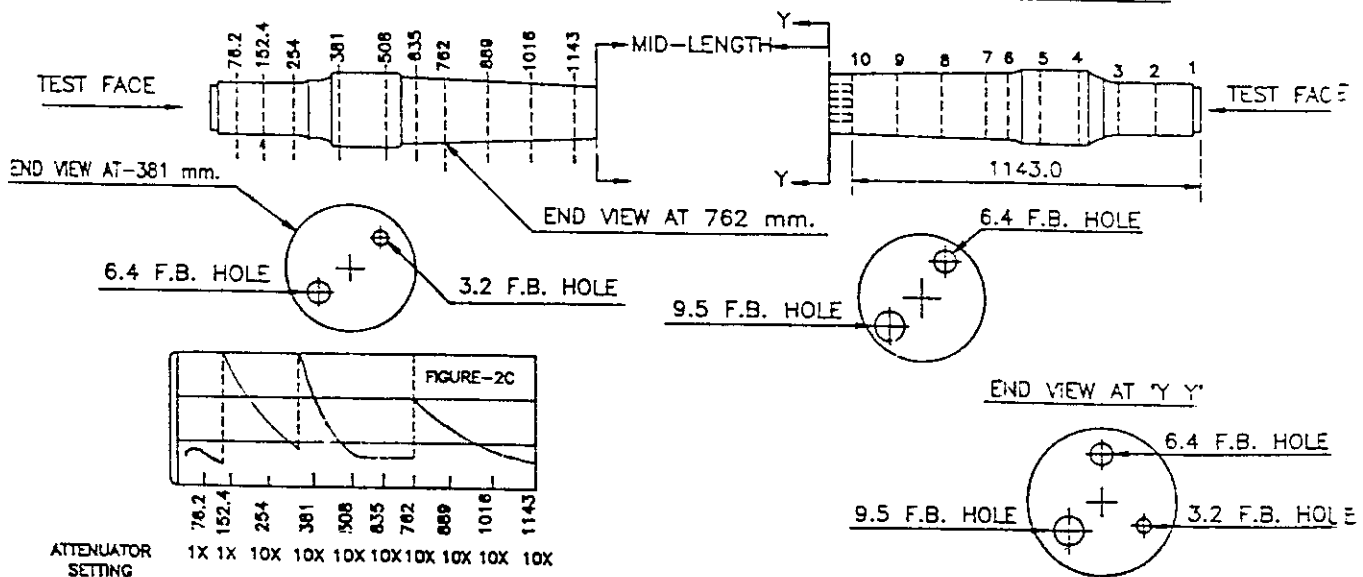


FIG. 2d, 2b, 2c EXAMPLE OF ESTABLISHING DISTANCE-AMPLITUDE
CURVE FOR A TYPICAL AXLE

TABLE FOR FIG.2a

FLAT BOTTOM HOLE (mm)	DISTANCE OF THE FLAT BOTTOM OF THE HOLES FROM THE TESTING FACE (mm)
Ø 3.2	76.2 , 152.4 , 254
Ø 3.2 & 6.4	381
Ø 6.4	508 , 635
Ø 6.4 & 9.5	762
Ø 9.5	889 , 1016 , 1143

NOTE:-

FIG.2b INDICATES THE LOCATIONS
1 TO 10 WHERE THE REFERENCE
AXLE WILL BE PROGRESSIVELY
SLICED AND TESTED.

(APPENDIX-A)