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GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)

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No.2017/Track-III/TK/13

Dated : 26.12.2017

Principal Chief Engineer,  
West Central Railway,  
Jabalpur.

**Sub: Outsourcing of mechanized deep-screening of track**

**Ref: Discussions during review of WCR by Hon'ble MR on 23.11.2017**

The subject of taking track machines on hire/annual rental/lease basis for track overdue maintenance activities was discussed during the above review meeting. It was also decided that broad guidelines for the same shall be issued to Zonal Railways for entering into the contract by Zonal Railways themselves.

On review of arrears of track maintenance activities, especially deep-screening over Indian Railways, it is noted that available machines with present availability of block are not adequate to meet even the current work-load. The procurement and supply of machines may take some time. Zonal Railways, during various reviews, have expressed that outsourcing of track maintenance activities through Contractors' own track machines may be permitted. The matter was considered in the Railway Board and it has been decided that Zonal Railways may explore the possibility of outsourcing following urgent mechanized track maintenance activities:

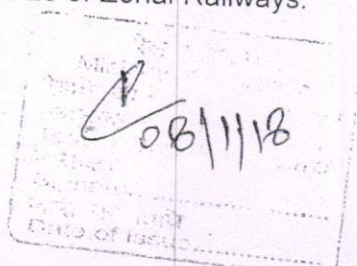
- i. Deep screening of track with agency's own set of track machines
- ii. Track renewal with contractors own TRT machines
- iii. Tamping of worksites and on construction projects with contractors own machines.

Accordingly, broad guidelines for deep screening of track through contractors' track machines are enclosed for entering into service contract wherever required by Zonal Railways. The guidelines enclosed are only indicative and may be modified to suit the local working conditions by Zonal Railways with approval of Principal Chief Engineers. For outsourcing of other mechanized maintenance work, contract conditions may be framed on similar lines as per requirement of Zonal Railways.

Encl: As above

04/26.12.17  
(Dinesh Tripathi)  
Director Track (MC)  
Railway Board

Copy to: All PCEs of Zonal Railways.



Pl. issue am. 1/5/18  
05/01/18



## **BROAD GUIDELINES FOR ENTERING INTO CONTRACT FOR OUTSOURCING MECHANIZED DEEP SCREENING OF TRACK WITH AGENCIES' MEN & MACHINE**

1. Work may be outsourced on per Km basis. Agency has to arrange all the Track Machines required for work along with the trained staff to operate them, as per Railways safety requirement.
2. The Type / model of track machines which has already been approved and are working on IR system can only be deployed for the work. In case agency intends to deploy some other type of machine, it can be permitted only after CRS sanction. Responsibility of obtaining CRS sanction for such machine solely lies with the agency, duly coordinated by Zonal Railways.
3. In Contract document scope of the work and all functional requirements of the machines to be deployed are to be clearly defined by Zonal Railways.
4. *Broad Functional requirement for Service Contract for Mechanized Deep Screening work with contractors' own machines are given for general guidance purpose only. Railways may modify these as per the site condition and contract management requirement, with the approval of PCE.*
  - 4.1 Ballast cleaning (Deep screening) shall be planned using minimum two No of Ballast Cleaning Machine (BCM), 1 Work Site Tamper (WST), 1 Dynamic Track Stabilizer (DTS) and 1 Ballast Regulating Machine for optimum utilization of traffic block.
  - 4.2 Ballast cleaning (Deep screening) of the entire cross section of Track Ballast on B.G. (1676 mm gauge) track with concrete sleepers on plain, transition and curved track (up to 10°). The ballast cleaning (Deep screening) work should include all necessary pre-work, during block and post traffic block work involved for Ballast cleaning (Deep screening) by BCM
  - 4.3 After ballast cleaning (Deep screening) work on existing BG (1676 mm) track it should be possible to allow the trains to pass at a minimum speed of 40 kmph, just after completion of work and clearance of the block section and speed has to be relaxed to normal in stages as per IRPWM.
  - 4.4 The work can be outsourced for 5 to 10 years. With Expected output per month by providing assured block.
- 5.0 **Technical Requirements:** Technical requirements for machines and works are enclosed in Annexure-II for broad guidelines.
- 6.0 **Brief Functional Requirements for works as broad guidelines are enclosed in Annexure-III.**
- 7.0 **Scheduled Operation:**
  - i) Machine should be ready daily for work at 8 hrs for day working or 20.00 Hrs. for night working, one or two hours shifting time may be taken according to sectional traffic condition.
  - ii) According to required/available block timing, day or night working will be decided by the IR official on machine with discussion after zonal/ Divisional controllers and same is communicated to the contractor persons well in time for next working spell.
  - iii) During block all essential safety and other railways working rules shall be followed by the contractor as well as IR staff without any biases.



- iv) Required pre ballast cleaning preparation and during screening, essentials norms will be followed by the machine staff to avoid any mishaps.
- v) During operation all necessary consumables will be arranged by firm and no extra payment will be made for these.

#### **8.0 Scheduled Maintenance:**

- i) Daily maintenance will be done after ballast cleaning operations. Other schedule maintenance (weekly, monthly, two monthly, quarterly, half yearly, yearly and two yearly checks) are to be performed at appropriate time intervals in the 15 days non-working days in quarter.
- ii) Routine maintenance of undercarriage systems shall be undertaken by the firm.
- iii) Firm shall be responsible towards mounting and dismounting of unserviceable components/ parts / materials on the BCM. Firm shall be responsible for providing sufficient number of serviceable components/ parts/materials on the BCM to minimize break down or delay.
- iv) Wheel and Bogie turnings (if needed) will be coordinated and executed by Zonal Railway and wheel turning charges of as applicable by w/shop per wheel would be paid by the firm.
- v) During maintenance all necessary consumables will be arranged by contractor and no extra payment will be made for these.

#### **9.0 Maintenance of Records:**

- i) Maintenance records during Schedule and breakdown maintenance shall be maintained in hard copy as well as soft copy as per format provided and updated time to time.
- ii) These records shall be provided to Zonal Railway crew on the machine in a timely manner.
- iii) Firm shall complete a standard daily report accurately depicting operational times, delays, and machine availability. Zonal Railway crew/ representative have to sign daily report based on satisfactory completion of daily operational services. The signed daily report shall be the basis for invoicing and shall constitute Zonal Railway's acceptance of day to day work apart from the completion of scheduled maintenance in timely manner.

#### **10.0 Mode of payment:**

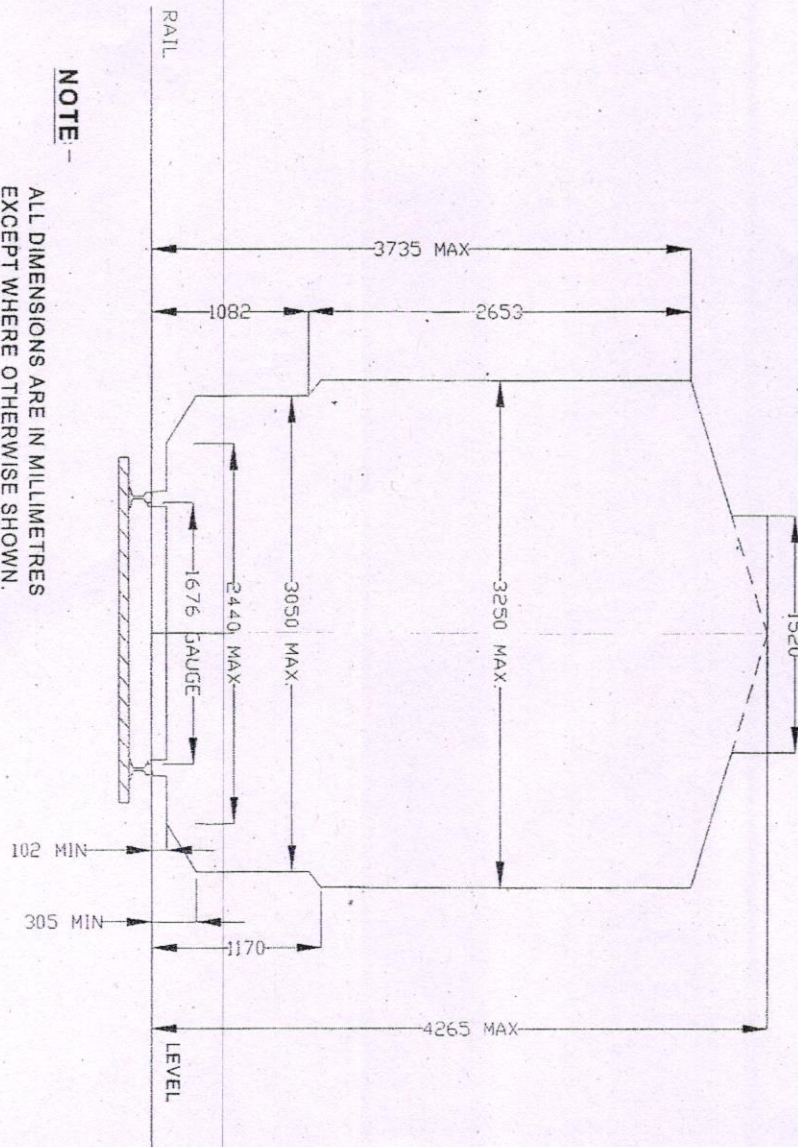
- i) Payment will be made as follows:
  - (a) The payment for the working of 2 Nos of BCM, WST, BRM and DTS per km may be made for Deep screening of track to allow the trains to pass at a minimum speed of 40 kmph.
  - (b) The payment for the working of WST and DTS per km for increasing speed after subsequent round of tamping.
  - (c) The payment for the working of BRM per km for boxing of ballast section and tiding as per LWR manual.
- ii) Suitable penalty clause for Railway and agency may be incorporated.
- iii) Any damage or losses to Railway/Public during ballast cleaning in case of fire or any other operation in BCM will be borne by firm itself.

#### **11.0 General Instructions to Tenderers for guidance are enclosed in Annexure-IV.**



# MAXIMUM MOVING DIMENSIONS

DIAGRAM No. 1D (EDO/T-2202)  
1676mm GAUGE



## NOTE-

ALL DIMENSIONS ARE IN MILLIMETRES  
EXCEPT WHERE OTHERWISE SHOWN.



**Technical Requirements**

i)	Working Site	<p>a) On straight, transition and curved track (up to 10°) on broad gauge (1676mm) of Indian Railways.</p> <p>b) In long continuous cutting/high bank. The machine working in cuttings should not adversely affect the side drainage.</p> <p>c) On all types of track structures including rails of 60 kg/52 kg/90R on concrete/metal/ wooden sleepers on tangent track as well as curves.</p> <p>d) Operation of Machine, involved in ballast cleaning (Deep screening) should not result in excessive stresses in the rails, sleepers and fastenings.</p> <p>e) In case there are any specific requirements to bring the rails to a minimum stress free condition before the start of work (in case of LWR/CWR), the same should be specified by the supplier.</p> <p>f) While excavating, there may be few hidden obstructions encountered by the excavating chains. The excavating mechanism should be equipped with a safety mechanism so as to stop the excavating chains immediately on encountering a hidden obstruction so as to avoid any damage to the excavating mechanism or the machine.</p>
ii)	Track Geometry Guidance	The machine involved in ballast cleaning (Deep screening) work shall be equipped with a Track Geometry Guidance system. The Track Geometry Guidance System shall restore the track to original longitudinal and lateral profile after the track skeleton is released back on the screened ballast bed.
iii)	Profile of the machine involved in ballast cleaning (Deep screening) work longitudinally and in cross section during movement	<p>a) Within the maximum moving dimensions shown in the Indian Railways Standard BG schedule of Dimensions (metric)-2004 print and is enclosed, as Annexure-I</p> <p>b) Machine shall be capable of working without requiring power block in electrified sections. 25 KVA AC is used for traction through an overhead wire at 5.5 m above rail level. On bridges and tunnels, the height is restricted to 4.8 m.</p>
iv)	Minimum vertical clearance of any part/component of the machine.	102 mm from rail level while travelling
v)	Axle load	Lesser than 20.32 t (Axle loads upto 22.82 tonnes and lower axle spacing may be permitted, provided the load combinations do not cause excessive stresses in the tracks & bridges of IR). Stresses in the tracks & bridges shall be calculated by IR/RDSO based on design data submitted by the firm and decision of IR/RDSO shall be final in this regard.
vi)	Minimum axle spacing	1.83m
vii)	Load per metre	Not exceed 7.67 t



viii)	Wheel dia	914 mm. Lesser diameter upto 730 mm (new forged wheel profile) can also be considered, provided it meets the conditions of condonation of infringements (if any) at the discretion of the purchaser									
ix)	Ambient condition	Ambient temperature : 0° - 55°C Altitude : Sea level to 1800 m above mean sea level Relative Humidity : upto 100% Maximum rail temp. : 70° C									
x)	Maximum Speed (during movement in train formation)	90kmph									
xi)	Output	<p>The efficiency of screening shall be judged by collecting four samples of the screened material as it falls from the machine. Not more than 4% of screened ballast by volume shall pass through a 25 mm Sieve (ISI Standard). Four samples of the muck disposed by Ballast Cleaning Machine shall also be collected. This muck should contain no more than 10% of ballast of size between 25mm to 65 mm. The size and gradation of new ballast being used in Indian Railways is as given below:</p> <table border="1"> <tr> <td>a.</td><td>Retained on 65 mm square mesh sieve</td><td>5% max.</td></tr> <tr> <td>b.</td><td>Retained on 40 mm square mesh sieve</td><td>40%-60% (for machine crushed)</td></tr> <tr> <td>c.</td><td>Retained on 20 mm square mesh sieve</td><td>Not less than 98% (for machine crushed) Not less than 95% (for hand broken)</td></tr> </table>	a.	Retained on 65 mm square mesh sieve	5% max.	b.	Retained on 40 mm square mesh sieve	40%-60% (for machine crushed)	c.	Retained on 20 mm square mesh sieve	Not less than 98% (for machine crushed) Not less than 95% (for hand broken)
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**Brief Functional Requirements**

The ballast cleaning (Deep screening) service contract shall involve following works:

- i) Pre ballast cleaning preparations like detection of S&T and electrical cables, boulders, any other obstructions shall be completed in advance.
- ii) Excavating ballast bed up to a depth of 900 mm below the rail top (Up to 350 mm below sleeper) and entire width of ballast section. The entire width of ballast section for plain track as well as turnouts shall be screened.
- iii) Conveying the recyclable ballast after cleaning and screening to ballast feed.
- iv) Conveying the non-recyclable/unserviceable ballast and muck for disposal to muck wagons/outside the track.
- v) The recycled ballast shall be deposited on the formation top, before the lifted track is placed back on it.
- vi) Release the lifted track on ballast bed followed by initial packing and initial stabilization by DTS so as to allow the trains to pass at a speed of not less than 40 kmph after clearance of the traffic block/track possession by the machine. The speed shall be relaxed to normal in stages as per IRPWM.
- vii) The ballast shall be provided and unloaded in the section by the Railway.
- viii) It shall be required to lifting the track ahead of excavating mechanism up to at least 100 mm and temporarily slew the track by at least up to 200mm.
- vii) Correction of track geometry, tamping and stabilization of track and ballast profiling as per LWR manual.
- viii) The machine involved for ballast cleaning (deep screening) work should have arrangements for adjusting the edge of cut to avoid obstructions like signal/OHE mast foundations etc.
- ix) While working on double/multiple line sections, it shall not infringe the adjoining track and it shall be possible to permit trains at full speed on that track. Minimum spacing of track is 4265 mm centre to centre.
- x) The BCM, WST, DTS, BRM and manpower will be supplied by firm for deep screening of track, tamping, stabilization of track, ballast profiling and removal of muck from platform, drainage, cess etc.
- xi) The leftover locations are to be deep screened manually by firm's manpower as per IRPWM manual before relaxing speed restriction to normal.
- xii) Average 3 hrs traffic blocks will be made available to the firm for deep screening of track by BCM.
- xiii) The machines shall be available for working for <sup>minimum</sup> 25 days in a month.
- xiv) Track parameters to be maintained in tamping work:

(a)	Unevenness	:	± 1 mm on 3.6 m Chord
(b)	Cross level	:	± 1 mm
(c)	Alignment	:	± 2 mm on 7.2m Chord
(d)	Twist	:	1 mm/m



General Instructions to Tenderers

1. The tenderer is responsible for ensuring the availability of machine for **08 hour every day** for operation (which might be increased by up to 3 hours depending on traffic condition over IR during operation). During maintenance shift, the stipulated maintenance of Machine, stipulated preventive checks and schedule maintenance of machine including all assemblies (like engines, generators, Hydraulic system, Pneumatic system and electrical control system etc.) or sub-assemblies (various water & HSD oil pumps, sensors etc) as specified by OEM/supplier as well as RDSO updated time to time to ensure its upkeep shall be carried out by the supplier.
2. The tenderer has to ensure sufficient number of operators and skilled/semi-skilled staff required for operation and maintenance of machine. The operators shall be certified by the OEM and will have valid competency certificate in train operation issued by ZRTI/IR and will be medically fit in A-1 Category. In case initial/refresher course to be done for G & SR from ZRTI/IR during the currency of this contract, the same shall be got done for the operators by the contractor and it shall payable as applicable. Zonal Railways shall facilitate in expediting the process. All the operators shall have valid Periodical Medical Examination (PME) certificate issued by IR and all the cost for medical examination connected with PME, shall be payable by the contractor.
3. The machine will work on IR track with the trains running on adjacent tracks. The contractor must ensure the care /safety/health hazards of the labours engaged by him/her during the course of the execution of work. Necessary safety equipment shall be provided by the contractor for the staff engaged by the tenderer and also for 2-4 IR official nominated on this machine. No extra amount is payable toward this.
4. The contractor's staff & labour shall not have any claims of appointment in Railways in future.
5. Authorized Railway's representative having route learning of the particular section where the Machine is working will be present for supervising the work and to monitor the movement of the Machine from one section to another. Machine shall not be moved without authorized Railway's representative. The Railway's representative would be provided free of charge.
6. Machine shall be made available for operation for minimum period of **25 days in a month and 75 days in consecutive 3 months**. The balance 15 days are meant for various maintenance functions during which all maintenance activities are to be completed by the contractor. While the Machine is on transit from one station to another or waiting for loco for hauling, it will be considered as available unless the Machine is under breakdown preceding to this.
7. The tenderer will be responsible for ensuring the availability of machine for **eight hours every day for at least 25 days a month** and the availability certificate will be rendered (as per enclosed Annexure - A). During these 8 hours (which may be in two shifts with one break of maximum upto 3 hours) of daily availability of machine, the actual working hours during the block will be generally about 4 hours per day.

The reduced availability of machine will attract penalties. The machine availability for penalties purposes will be worked out by taking average availability of machine after 6 months (150 days over 6 months). Availability of machine for work less than 150



days in 6 months period on account of supplier during the warranty period will invite a penalty of Rs 30,000/- per day. The penalty certificate will be rendered (as per enclosed Annexure - B)

8. When the Machine is on transit with its own power from one station to another, the Machine shall be made available for movement in two shifts of 10 hours each (2x10 hours) in 24 hours time frame till it reaches destination, since there will be no routine maintenance. The staff of operation and maintenance shall be so redistributed that at least one operator and three other staff are available in each shift during transit. The movement of machine shall be made only in the presence of authorised Railway representative having route learning of the section.
9. Complete and up to date records for daily, weekly and monthly maintenance will be maintained by the contractor and counter signed by IR officials. The daily/weekly/monthly and all progress report in the special format shall be mailed to division/zone/RDSO/Rly board daily for which arrangements shall be made on the machine.
10. The contractor shall maintain the history book, log book and all other documents prescribed for track machines on IR. The daily progress and history shall be mailed to the nominated IR official along with weekly and monthly progress reports in the prescribed format.
11. Contractor shall furnish adequate VHF sets for crew communication for safe operation of Machine. This should include at least 6 hand free devices.
12. Contractor shall keep adequate spares likely to be consumed.
13. Each party agrees to indemnify, defend, and hold harmless the other party from all liability, cost or expense (including any court costs) caused by the joint and/or concurring negligence of the parties, arising on account of injury to or death of any employee, agent or representative of the indemnifying party during the performance of the Services or who shall, if not performing Services, be present as a bystander or otherwise on the property of either party, provided always, however, that if the injury or death to an employee of an indemnifying party is caused solely by the negligence of the other party then this indemnity and hold harmless provision shall be null and void, and the party who solely caused the injury or death shall bear the cost or expense. Notwithstanding any provision herein to the contrary, Tenderer total cumulative liability for any or all claims arising out of this agreement shall not exceed the three month value of this contract.
14. If there is deficiency of staff on Machine w.r.t. minimum stipulated staff in operation and maintenance (minimum staff in O & M shift put together), penalty of Rs 3000.00 per head per shift or part thereof shall be imposed. For maintaining attendance of the staff for this purpose, the contractor has to provide biometric attendance system in the camping coach & he shall ensure it is working condition always. No extra payment shall be admissible on this account.
15. The maintenance role encompasses undertaking all schedule/periodic/ routine of machine including all assemblies ((like engines, generators, Hydraulic system, Pneumatic system and electrical control system etc.) or sub-assemblies (various water & HSD oil pumps, sensors etc) as specified by Supplier / OEM as well as RDSO updated from time to time, either by day or night. OEM recommended spares shall be transported from Railway store to the machine and released spare/material from machine to Railway store by Zonal railway.



## TENDER FORM (Third Sheet)

Name of Work: \_\_\_\_\_

## SCHEDULE OF RATES AND QUANTITIES

SL	Item No.	Description of Item of Work	Approximate Quantity	Unit	Rates in Figures and Words (₹)	Amount (₹)
1	2	3	4	5	6	7

## AS PER DETAILS ON IREPS AND TO BE FILLED ONLINE ONLY

The quantities shown in above Schedule are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The Railway reserves the right to increase/ decrease and/or delete or include any of the quantities given above and no extra rate will be allowed on this account.

I/We undertake to do the work at \_\_\_\_\_ % above/below the Schedule of Rates of the \_\_\_\_\_ Railway as applicable to \_\_\_\_\_ Division or at the rates quoted above for each item.

Dated \_\_\_\_\_

Signature of the Tenderer(s)

Note: Columns 1 to 5 shall be filled by the office of the Authority inviting tender. Columns 6 & 7 shall be filled by the Tenderer(s) only when percentage tenders are not invited.



# AGREEMENT FOR ZONE CONTRACT

CONTRACT AGREEMENT No. \_\_\_\_\_ DATED \_\_\_\_\_  
 ARTICLES OF AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_  
 between the President of India acting through the \_\_\_\_\_  
 Railway hereinafter called the "Railway" of the one part and  
 \_\_\_\_\_ hereinafter called the "Contractor" of the other part.

WHEREAS the Contractor has agreed with the Railway during the period  
 of \_\_\_\_\_ months from \_\_\_\_\_ to \_\_\_\_\_ for the  
 performance of:

- (a) New Works, additions and alterations to existing structures, special repair works and supply of building materials subject to the contract value for such works not exceeding ₹ \_\_\_\_\_.
- (b) All ordinary repair and maintenance works at any site between kilometer \_\_\_\_\_ and kilometre \_\_\_\_\_ as will be set forth in the work orders (which work orders shall be deemed and taken to be part of this contract) that will be issued during the said period at \_\_\_\_\_ % above/below the Schedule of Rates of the \_\_\_\_\_ Railway, corrected up to the latest correction slips and Standard Specifications of the \_\_\_\_\_ Railway corrected upto latest correction slips and the Special Conditions and Special Specifications, if any in conformity with the drawings (if any) that will be issued with the work order, aforesaid AND WHEREAS the performance of the said work is an act in which the public are interested.

NOW THIS INDENTURE PRESENTS WITNESSETH That in consideration of the payment to be made by the Railway, the Contractor will duly perform the works set forth in the said Work Order and shall execute the same with great promptness, care and accuracy, in a workman like manner to the satisfaction of the Railway and will complete the same on or before the respective dates specified therein in accordance with the said specifications and said drawings (if any) and said conditions of contract and will observe, fulfill and keep all the conditions therein mentioned, (which shall be deemed and taken to be part of this contract as if the same had been duly set forth herein), AND the Railway both here-by agree that if the Contractor shall duly perform the said work in the manner aforesaid and observe and keep the said terms and conditions, the Railway will pay or cause to be paid to the Contractor for the said works on the completion thereof the amount due in respect thereof at the rates specified above.

Contractor \_\_\_\_\_

Address \_\_\_\_\_

Designation \_\_\_\_\_

Northern Railway

(For President of India)