

## **SPECIAL CONDITIONS FOR BALLAST SUPPLY.**

### **BIKANER DIVISION.**

#### **1. MANDATORY CONDITION FOR SUBMISSION OF TENDER.**

Each tenderer at the time of tendering shall submit the test report of impact value, abrasion Value and water absorption value from approved laboratories and list of these laboratories are mentioned in the tender documents in Annexure-D. **In absence of this, the offer will be summarily rejected.**

**The test report should not be older than 6 months from date of opening of tender. Name /Location of quarry from which ballast is to be supplied should also be mentioned in test report.**

**The tenderer shall also furnish an undertaking as Annexure- E and include in the tender document that the ballast supply at all times will conform to specifications for track ballast as specified by the Railway without these the tender will be summarily rejected.**

Similar nature of work for Supply of ballast will be as under- **“Any Civil Engineering work or supply of Ballast /Boulders/Materials for concrete road.”**

#### **2. Specification of track ballast.**

The track ballast shall be procured confirming to specifications for Track Ballast- **IS/RDSO-GE/0001: 2023, February- 2023** with amendments up to the date of opening of tender. The ballast should be hard durable and as far as possible angular along edges/corners, free from weathered portions of parent rock, organic impurities and inorganic residues.

- 2.1 Ballast should be cubical in shape as far as possible. Individual pieces should not be flaky and should have generally flat faces with not more than two rounded/sub rounded faces.
- 2.2 Ballast shall be manufactured by crushing stone with machine of required specification and shall confirm to following physical properties, size and gradation.
  - 2.2.1 The aggregate abrasion value as per the test conducted based on IS:2386 Part IV-1963 shall not be more than 30%.
  - 2.2.2 The aggregate impact value tested as per IS:2386 Part IV-1963 shall not be more than 20%.
  - 2.2.3 The water absorption tested as per IR:2386 Part III 1963 should not be more than 1%.
  - 2.2.4 Ballast should not retain more than 5% on 65mm square mesh sieve, retention on 40 mm square mesh sieve shall be within the limits of 40% to 60% and minimum 98% should retain on 20 mm square mesh sieve. In case ballast retention on 65mm sieve exceed 5% but does not exceed 10%, the payment to be made with 5% reduction in accepted rate for the full stacked quantity. In case the retention on 65 mm sieve is more than 10% then entire ballast stack shall be rejected. In case the ballast retained on 40 mm sieve exceeds 60% limit as mentioned above but does not exceed 70%, then
    - (a) Payment to be made with 5% reduction in accepted rate for the stacked quantity if retention on 40 mm sieve is between 60% (excluding) and 65% (including) and
    - (b) Payment to be made with 10% reduction in accepted rate if retention on 40 mm sieve is between 65% (excluding) and 70% (including).

The ballast of the entire stack shall be rejected if the retention on 40 mm sieve exceeds 70%. The ballast shall also be rejected for entire stack if the retention on 40 mm sieved is less than 40% and/or retention on 20 mm sieve is less than 98%.

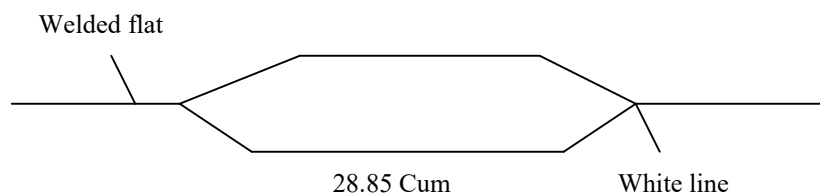
- 2.3 Nominal sizes of sieves shall be 65 mm, 40 mm and 20 mm. A tolerance of  $\pm 1.5\text{mm}$ ,  $\pm 1.5\text{mm}$ , and  $\pm 1\text{mm}$  is permitted in 65 mm, 40 mm and 20mm square mesh sieves respectively. The sieving screen shall be square mesh of minimum size 100 cm x 70 cm x 10cm. the screen shall not be kept inclined but held horizontally and shaken vigorously. The pieces of ballast retained on the screen can be turned with hand to see if they pass through without applying force. The percentage passing through or retained on the sieves shall be determined by weight only.

### 3.0 Depot supply:

- 3.1 For ballast collected in depot, instructions contained in para 266 of IRPWM regarding register of ballast collection, training out, loading from the depots and quantity trained out should be adhered to.

### 3.2 Method of measurement:

- 3.2.1 The mode of measurement will be stack measurement. The stacking area shall be level, firm and with good drainage. The stacking area shall cover the entire ballast siding and supply shall be taken in the entire length as per the pre-decided stacking plots. The depot shall have a depot diagram with clear demarcation of plots. Each plot shall be demarcated by erecting a vertical rail post of minimum 3 m heights above the ground level. Its length at the interval of 25 cm shall be marked by paint. Each stack shall be so formed that ratio of longer to smaller side does not exceed 2.5. the height of stack shall not be less than 1.0m. the side slopes of stack should not be flatter than 1.5:1 (Horizontal: Vertical) and the cubical content of each stack shall not be less than 30 cum. Supply on a plot shall be started only after certification by the ADEN in the ballast passing register based on his personal inspection that all the ballast earlier supplied in the plot has either been trained out or a separate stacks has been formed out of left over ballast in the depot and measured and marked accordingly in the depot ballast register as well as in the measurement Book.
- 3.2.2 All depots shall have the ballast testing facilities to check the physical properties of the ballast at required frequency.
- 3.2.3 At the time of start of loading of ballast into wagons (ballast hoppers), there should not be any disturbed stack in the deport. Ballast shall be loaded into wagons to their loading capacity and up to the line of loading marked with a continuous white paint inside the wagon. The white line marked inside the wagon is to indicate the level to which ballast should be loaded. The measurement of the ballast shall also be taken in the wagon and cubical content in cubic meter corresponding to the top level of the ballast line shall be worked out as per the standard inside dimensions of the wagon. The cubical content in cubic meter corresponding to white line should also be painted on outside the wagon after joint verification by contractor(s) and Assistant Engineer. The joint statement showing the dimension and cubical content shall also be test checked by DEN/Sr.DEN in charge of depot before commencement of the first loading. ***This statement shall be entered in measurement book also and should be signed by contractor(s) or his authorized representative, permanent way inspector and Assistant Engineer and counter signed by DEN/Sr.DEN.***



- (a) The payment shall be made for the gross measurement in stacks without any deduction for shrinkage/voids. However, shrinkage up to 8% shall be permitted at destination while verifying the booked quantities by the consignee.
- (c) The measurement shall be taken for each wagon and recorded in measurement book if any wagon is found to be under loaded i.e. not loaded up to the loading line marked on the wagon, the contractor(s) should load immediately. Detention of the wagons on this account will be counted in the loading time allowed the the contractor(s).

### 3.3 **SAMPLING AND TESTING:**

3.3.1	<b>General</b>		
3.3.1.1	The sample shall be drawn with due diligence and adequate precaution so that they represent the true nature and condition of the ballast		
3.3.1.2	Being a heterogeneous material, the gradation of ballast loaded in wagons and/or dumped/inserted in the tract may not remain same as that initially checked in stacks, due to lifting, loading, transportation, unloading etc. Similarly in case of direct loading into wagons, the gradation of ballast at destination may not remain same as that at source, due to loading, transportation etc. Therefore, the samples from wagons and track are not representative samples as far as gradation is concerned. Even in the same stack, results of two checks may not be same.		
3.3.1.3	The samples from a stack taken after lapse of a long period of stacking are not representative samples of the ballast initially supplied in the stack, due to settling down of smaller size particles in voids underneath, dirt/dust getting accumulated in the stack, rains etc.		
3.3.2	<b><u>Sampling Frequency</u></b>		
	In order to ensure supply of uniform quality of ballast, the following norms shall be followed in respect of sampling , testing and acceptance:		
	On supply of the first 100 cum, the tests for size & Gradation, Abrasion Value, Impact Value and Water Absorption (if prescribed) shall be carried out by Railway. Further supply shall be accepted only after this ballast satisfies the specification for these tests. Railway reserves the right to terminate the contract as per GCC at this stage itself in case the ballast supply fails to confirm with any of these specifications.		
	<b>Subsequent test shall be carried out as follows:</b>		
	<b>Type of Tests</b>	<b>Supply in Stacks</b>	<b>Supply in Wagons</b>
	(a) Size and Gradation Tests	One for each 100 cum or part thereof in any stack	One for each 100 cum or part thereof for qualified to be loaded in Wagons
	(b) Abrasion Value, Impact Value and Water Absorption Value ( * )	<b>One Test for every 2000 Cum</b>	
	(*)These tests shall be done for the purpose of monitoring quality during supply. In case of the test results not being as per the prescribed specification at any stage, further supplies shall be suspended till suitable corrective action is taken and supplies ensured as per specifications. The above tests may be carried out more frequently, at the discretion of Railway.		
3.3.2.3	All tests for Abrasion Value, Impact Value and Water Absorption should be got done through approve laboratories or Railway's own laboratories ( list of these laboratories shall be mentioned in the tender document). These tests, subsequent to award of contract, shall be done at Railway's cost.		
3.3.3	<b><u>Supply of Ballast in Stacks</u></b>		
3.3.3.1	<b><u>Sampling Procedure</u></b>		
(i)	At the time of formation of stacks, sufficient care should be taken to ensure that there is sufficient space around the stack to facilitate movement of JCB/Power Equipments. The length and width of each stack shall be kept in such a way that every part of the stack is accessible to the JCB or Power Equipment, to be deployed for drawing "Samples".		
(ii)	In case of ballast supply in stacks , three :Samples" each of 0.3-0.5 cum volume, one sample each from two sides and one sample from top after removing outer layer ( 150-200 mm) should be collected from stack for every 100 mm or part thereof, by JCB or other suitable Power Equipment.		
(iii)	The location (in Plan) and depths of sampling points shall be varied for different "Samples" and different stacks in a lot.		
(iv)	"Gross Sample" should be prepared by thoroughly mixing the three "Samples" collected as in (ii) above, using JCB bucket or any other suitable Power Equipment, on a clean, flat and hard surface		
	<b>Note:</b> In exceptional cases of site specific, constraints, approval of Competent Authority ( Engineer-in-charge) shall be taken prior to invitation of tender, for using manual means for collection and mixing of "Samples" and this should be incorporated in the Tender document.		
(v)	A "Test sample" of volume 0.027 cum shall be drawn from each of the Gross sample". By the method described in Para 3.3.3.1 (vi), for carrying out size & Gradation tests.		
(vi)	Method for drawing "Test sample". The ballast in "Gross Sample" shall be scooped into a cone		

	shaped pile by taking care to drop each scoopful exactly over the same spot. After the cone is formed, it shall be flattened by pressing the top of core with as smooth surface. Then it is cut into quarters by two lines which intersect at right angles at the center of the cone. The bulk of the sample is reduced by rejecting any two diagonally opposite quarters. The remaining ballast shall be mixed and "Test Sample" shall be drawn for testing. After drawing "test sample" the left over ballast of "Gross Sample" shall be dumped back in the stack.
(vii)	In case clean, flat and hard surface is not available then a tarpaulin or any other suitable sheet may be used on a flat surface for mixing, drawing and sieve analysis of samples.
3.3.3.2	In case of stacks of volume more than 100 cum, more than one "Test Sample" will be tested for Size & Gradation. In such cases, the sieve analysis results of all the "Test Samples" shall individually confirm to following gradation for acceptance/ rejection of the whole stack.
(i)	Retention on 20 mm Sq. Mesh Sieve shall not be less than 98% for machine crushed ballast ( not less than 95% for hand broken ballast).
(ii)	Retention on 40 mm Sq. Mesh Sieve shall be between 40 to 70%
(iii)	Retention on 65 mm Sq. Mesh Sieve shall not be more than 10%
	The full payment/ reduced payment for the whole stack, as given in Para 2.3 of the "Specifications for Track Ballast (IS/RDSO-GE/0001: 2023, February- 2023), shall be decided based on the average of the sieve analysis results of all the "Test Samples" for a stack.
<b>3.3.4</b>	<b>Supply of ballast in Heaps for loading directly in wagons.</b>
<b>3.3.4.1</b>	<b>Sampling Procedure</b>
	Samples of ballast shall be collected from heaps of ballast propose to be loaded into the wagons. For this, the contractor shall inform ADEN In-charge in writing sufficiently in advance before placement of rake, about the locations of ballast heaps from where it is to be loaded into wagons. ADEN In-charge shall decide the location of heaps from which sampling is to be done, judiciously covering the entire quantity of ballast to be loaded in the rake.
3.3.4.2	Based on the approx quantity of ballast to be loaded in the rake, methodology for sampling of ballast to be followed shall be as in para 3.3.3.1 and 3.3.3.2 above.

### 3.4 **Loading time:**

- 3.4.1 A rake of about 40 ballast hoppers shall be placed in the ballast depot siding. Contractor(s) should keep sufficient stock of ballast as per the loading arrangement. Contractor(s) should keep adequate loading arrangement to load the entire rake within 10 hrs of day time which will be free loading time (day time considered from sun rise to sun set)
- 3.4.2 An advance intimation of at least 6 hours for placement of rake shall be given by the Railway representative and the same should be entered in the register at least 6 hours in advance.
- 3.4.3 In case the rake is placed having composition of 30 ballast hoppers or less the free loading time will be 8 hrs (in day time). The loading time for a rake of more than 30 and up to 40 ballast hoppers shall be 10 hrs as mentioned above. The loading time for a rake of more than 40 ballast hoppers shall be 12 hrs.
- 3.4.4 Any delay in loading the rake up to the required line of loading into ballast hoppers within free loading time shall be on contractor(s) account and a penalty equivalent to demurrage charges prevailing as per Railway's rules during the currency of the contract shall be recovered from the contractor(s) for the entire rake of ballast hoppers. The contractor(s) will not have the privilege of seeking waiver of the demurrage charges.
- 3.5 On the day of measurement of fresh stacks, the approved depot/zone sketch shall be augmented by SSE/SE/JE-I incharge of the depot with the following colours/hatching
- (i) Stacks measure on date and yet to be paid for,
  - (ii) Stacks measured earlier and paid. This should include restacking of left over ballast in the depot after last train run-out to be carried-out by the contractor(s) at his own cost.

Besides signatures by SSE/SE/JE-I, the sketch should be got signed by authorized representative of the contractor and ADEN, duly certifying that position of stacks on the date of measurement has been correctly incorporated. Availability of the aforesaid augmented depot sketch shall be a pre-requisite for processing of the bill for payment in the divisional office.

- 3.6 The measurement in depot has to be done by SSE/SE/JE-I incharge of the ballast depot. The measurement along with the test results of each stack shall be entered in the measurement book. ADEN in charge of depot will carry out the 100% test check. He will also ensure that mandatory testing of properties of the ballast has been done and the ballast confirm to the specifications specified. DEN/Sr.DEN incharge of the depot shall carry out 10% test check on both quantity and quality. The DEN/Sr.DEN can also carry out test check enroute or at unloading point if he is unable to do at depot. For this purpose he shall advise ADEN incharge of the depot in writing before departure of the rake.
- 3.7 ADEN incharge of depot shall fax the measurement details to Dy.CVO/Engg. immediately once he has test checked stack measurements, made the bill and sent it to DEN/Sr.DEN for further necessary action. Dy.CVO/Engg or his representative may check the ballast stacks within the mandatory period of one week before training out. Dy.CVO/Engg or his representative may also check the measurement/quality of ballast in the hoppers, either at depot or enroute or just before unloading.
- 3.8 For training out of the ballast from the depot, a minimum period of one week after test check by ADEN incharge of the depot is required to be lapsed before training-out of the ballast. For training out, the approval of Sr.DEN/DEN is to be obtained by ADEN incharge of the depot in writing. In case DEN/Sr.DEN chooses to recommend training out earlier than a week, he may seek written approval of THOD through Sr.DEN/Co. with proper justification. A copy of such request should also be faxed to Dy.CVO/Engg.
- 3.9 The details shall be entered in the depot ballast register by incharge SSE/SE/JE-I of ballast depot with following details.
- (i) Reference to agreement no.
  - (ii) Date of measurement
  - (iii) Stack No.
  - (iv) Measurements as recorded indicating the different dimensions and volume.
  - (v) Result of physical properties test.
  - (vi) Result of the quantity check and qualitative check.

There should be no overwriting in the register. If any correction is required, the old entry should be struck off by drawing a line and a fresh entry made a initiated. No blank line should be left while recording. The recordings done at a time should be properly boxed by drawing a line at the start and close of the measurements. All entries made in depot ballast register should be same as entered in Measurement Book, which shall form the basis for the contractor's bill.

- 3.10 No measurement should be done for part stack(s). After measurement of a stack is done, it should not be disturbed except for training out or for restacking of left out ballast in the depot after last training-out by hoppers.
- 3.11 The contractor or his authorized representative shall sign the ballast register as well as the measurement book in token of acceptance of measurements taken by ADEN. After the stack is passed and measured, the stack number should be clearly marked on the stack either by lime or by placing a board. In addition, lime should be sprinkled along all the edges of the stack to indicate that the stack has been accepted.
- 3.12 In another register i.e. the ground balance register, the quantity of ballast measured in each plot should be entered. After subsequent training out of ballast from a plot, the successive reducing balances in that plot should be reflected date wise. For the quantities loaded, the reference of the challan no. should be shown. After the entire quantity in plot has been trained out, the ground balance should be reduced to zero and the plot shown as vacant. Further stacking at the plot can start only after permission by ADEN, when training out of entire ballast in the depot except small quantity of ballast left out after last training-out by hoppers, which should be restacked properly and measure.
- 3.13 The bills for payment to contractors should be prepared on the basis of the measurements recorded in the measurement book. The frequency of the preparation of bills can be flexible depending upon the quantities supplied by the contractor, his financial soundness and administrative conveniences etc. the attempt should be to pay the contractor(s) regularly with about 2 bills per month.

### **3.14 Procedure of movement of ballast rakes and accountal :**

- (a) The office of SSE/SE/JE-I incharge shall prepare the ballast challans on the prescribed Performa (Form E-1332) in 6 copies. One copy shall remain in the file of the concerned SSE/SE/JE-I incharge as the office copy, one copy shall be handed over to the ASM of station of ballast depot, who shall hand it over to the guard working on the ballast train. The remaining 4 copies of challans shall be later got verified from the consignee SSE/SE/JE-I incharge. One copy shall be retained by consignee, one copy shall be retained by incharge ADEN, one copy sent to the office of Sr.DEN and last copy sent along with the final bill of the concerned supplier.
- (b) The guard working the ballast train shall hand over the copy of the challan given to him the SSE/SE/JE-I (P.Way) where the ballast is unloaded. It is the responsibility of the consignee or his representative to make contact with the guard for collecting the copy of the challan, the guard shall hand it over to the SM of any of the either end block station where the ballast train has unloaded ballast. The SM in turn shall send a control message to engineering control that the ballast challan is in his custody and has not been collected by the SSE/SE/JE-I(P.Way) in whose jurisdiction ballast has been unloaded.
- (c) After receiving the ballast challan, if the consignee finds that the quantities entered for any wagon(s) in the ballast challan do not match the loading condition of the wagon actually, he shall note the actual quantities on the copy of the challan, intimate the consignor, his senior and consignor's seniors right away.
- (d) Similarly, in case a consignee is not able to unload any or some wagons due to whatsoever reason and the ballast in these wagons is sent back along with the ballast train, he shall note such quantities in the copy of challan. This copy of the challan shall thus help in verifying the ballast challans.
- (e) The challans finally verified, test checked and accepted by the receiving SSE/SE/JE-I concerned and the contractor or his authorized representative shall then be sent to the ADEN incharge. The final payment for supplying and loading shall be based on the lower of the measurements viz the measurement taken at the originating depot and measurement by the consignee.
- (f) In case, there is a dispute regarding the quality of ballast between the receiving ADEN and ADEN incharge of the ballast depot at which ballast is loaded, the matter should be referred to DEN/Sr.DEN incharge of the depot whose decision as regard the quality shall be final. In all such cases, the hoppers/wagons should not be unloaded directly on to the track but shall either be kept under load for inspection of the DEN/Sr.DEN or the ballast shall be unloaded and kept separately in stacks at some convenient place to facilitate inspection by DEN/Sr.DEN.
- (g) Within 1 day of a DMT having been dispatched, SSE/SE/JE-I (consignor) shall send 4 copies of ballast challans for verification. The consignee SSE/SE/JE-I shall promptly verify such ballast challans. These 4 challans shall be disposed in the manner mentioned in para 3.14(a) above.

### **4. Management of ballast rakes:**

- 4.1 A trained mechanic cum blacksmith preferably from mechanical department chargeable to engineering department may be kept in each depot for ensuring proper door opening and closing, greasing, attending to small repairs in consultation with Sr.DME of the division. For this if required, work charged posts for the staff and also provision for consumables may be kept sufficiently at each depot. the blacksmith shall accompany the ballast rake. It will be desirable that a crew rest van/second class coach is made a standard part of ballast rake composition to provide traveling and resting facility for blacksmith, relief guard and driver, trackmen required for unloading and other relevant staff.
- 4.2 There shall be a temporary site office, crew rest room, store room with required infrastructure at each ballast depot. the site office should have a computer, fax, printing facility and DOT/Railway telephone.
- 4.3 Timely examination of ballast hopper by TXR at nominated places preferably at depot itself is to be ensured. The ballast rake must be manned by guard. The break power must be checked by driver.
- 4.4 The timely intimation for placement of empty rake as per the contractual condition shall be given to the contractor or his supervisor representative to keep the ballast and loading arrangements in position so that loading can be completed within the free time allowed.
- 4.5 The requirement of ballast to be unloaded in each TP shall be assessed correctly by SSE/SE/JE-I of the section in advance and clear signals should be shown to driver to stop at exact require location.

- 4.6 The proper functioning of doors i.e. proper closing and easy opening should be ensured in advance. For any deficiency like not closing of the door or not opening of the door should be attended in advance and if still some deficiencies is left, the SSE(P.Way) depot shall be held responsible.
- 4.7 The SSE/SE/JE-I in whose jurisdiction ballast is to be unloaded should explain in advance to mate, keyman, trackmen, driver and guard about the location and safe working of ballast train before entering into block section for unloading from the adjacent station. Door flats of ballast hoppers should be opened slowly to avoid sudden discharge and thereby heaping of ballast. SSE/SE/JE-I must move along with ballast train while ballast is being unloaded and instruct the staff on train as per need using walkie-talkie sets. The ballast train shall not be moved at a speed higher than 8 to 10 Kmph while unloading the ballast. The ballast train shall move only in one direction and no pushing back should be done. The ballast train shall not be stopped while unloading is in progress. In case, due to unavoidable circumstances, the ballast train has stopped in the process of unloading, it should not start unless the ballast is cleared from the track and there is no infringement for its movement. Ballast shall not be unloaded on and near level crossing point and crossing and girder bridges. The ballast train should not work after sunset and on foggy days. Uneven unloading must be avoided.

## **5. SERVICE ROAD**

- 5.1 The contractor shall make his own arrangements for the path, service roads etc. for carrying his tools plants labour and materials etc. and will also allow the Railway to use such path service road, etc. for plying its own vehicles free of cost. The contractor will be deemed to have included the cost of making any path or service roads that may be required by him for plying his vehicles for carriage of his material tools/plants and machinery for successful completion of the work. Similarly any other feeder road connecting any of the existing roads will be made by the contractor at his own cost including any compensation that may be required to be paid for the temporary occupation and or use of the Government and/or private land and without in any way, involving the Railway in any dispute or damages and/or compensation.
- 5.2 In case the Railway has its own path or service road the contractor will be allowed to use such path or service road. He shall however in no way claim any extension/excuse for delay due to inaccessibility of such path or service road or not maintained or blocked and/or closed.

## **6.0 GROUND CLEARANCE.**

Stacking/collection is to be done by the contractor at the site approved by Asstt. Engineer before the work is started. The whole ground will have to be cleared of all trees and bushes along with their roots, heavy grass and shrubs by the contractor at his own cost. None of the items of work mentioned in this para shall entitle the contractor for any extra payment. The trees/wood cut down by the contractor will become the property of Railway, nothing extra would be paid by the Railway on this account, the contractor also will not have any claim in case of delay in removal of trees or shifting/raising/running of telegraph or electric lines over head or under ground if they fall in the way of the work.

## **7.0 RULES & BY LAWS**

- 7.1 Contractor shall be conversant and abide by the terms and conditions of contract and certify that he is conversant with the provisions of state Govt. Mines and Mineral Act. 1962 as amended up to date and rules there under and the standard conditions of contract specifications of N.Rly. and all the above conditions and the provisions laid there in also.
- 7.2 The contractor shall at all times keep the Railway Administration indemnified against all penalties that may be imposed by the Govt. of India or State Govt. for infringing any by law or rule prescribed by the appropriate government in respect of the provisions of the mines Act-1951 and rules made there under at all times.

## **8.0 REJECTED MATERIAL**

- 8.1 The Engineer Incharge or his representative shall mark all rejected ballast in any manner he thinks fit to ensure the same is not removed and mixed with good ballast and the contractor should within a fort night

from the date of such order remove the rejected ballast to such a place as may be directed by the Engineer/Incharge or his representative. In the even of contractors failing to do so, the Engineer/In charge or his representative may cause it to be removed and all cost of such removal shall be payable by the contractor to the Railway. The same may be recovered without prejudice from the contractor's bill against any work under execution with the Railways.

- 8.2 In the event the contractor desiring to remove the said rejected ballast from the land of the Railway for his own use, he shall take prior approval of Asstt. Engineer Incharge in writing
- 9.0. Facilities to be created at depot: Contractor(S) has/have to create and maintain the following facilities at his/their cost during the currency of the agreement.
- 9.1 The contractor(s) has/ have to level the stacking ground available on one side/both side of the ballast loading siding and make it fit for use in all weather conditions to avoid contamination of ballast with mud, loose earth etc. Similarly the contractor(s) has to maintain the approach road within Railway area in such a way that the same is fit for plying of truck/tiplers/dumpers/ the type of transportation vehicle used by the contractor (s).
- 9.2 Contractor(s) shall have to make the lighting arrangement to facilitate night working in case Railway's lighting arrangement are either not available or inadequate. Engineer in charge will decide the requirement of the lighting arrangement.
- 9.3 Contractor(s) shall have to create a full fledged ballast testing laboratories which should have the required testing equipments for testing physical properties of the ballast i.e. aggregate abrasion value, aggregate impact value, water absorption and sieve analysis and shall have to keep a trained technical supervisor to carry out the tests as per IS specifications. The laboratories to be created at the depot itself as per the location decided by engineer in charge. The contractor(S) has/have to go the testing equipments calibrated at the frequency specified in the IS code or as and when felt necessary by the Railways.
- 9.4 The contractor(s) shall provide temporary site office with a temporary lavatory for ADEN ballast depot and SSE/SE/JE (P.Way)/ ballast depot the side of the testing laboratories with minimum working equipments like two chairs for the officials, four ordinary visitors chairs, one computer along with printer, one fax machine and a BSNL telephone and a desert cooler/heater in summer/winter as per requirement, fan, light and water etc.
- 9.5 Contractor(s) shall also provide one temporary crew rest room of size 5m x 4m with a temporary lavatory with minimum three folding cots, mattresses, line quilt/blanket and three chairs with facilities like light and water etc.
- 9.6 The contractor(S) has to maintain the ballast siding for safe movement of the ballast train. The periodical cleaning of the siding to be taken in hand by the contractor(s) to keep it free from any obstruction, vegetation etc for carrying out the works such as packing, tightening of the fittings, casual renewal of sleepers, rails fittings maintaining proper drainage etc. as per the direction of engineer incharge or his representatives.

Sr. Divl. Engineer/Co-ord.  
N.W.Rly. Bikaner.

I,We-----

Hereby give an undertaking that the ballast supply to be given by me/us to the Railway against this contract shall be at all times according to conformity of Standard Specifications as specified in the specification/tender documents for Track Ballast. I/we shall adhere to the specifications and conditions of contracts at all times.

Date-----

Place-----

(Signature of Tenderer)

Address-----



## **ANNEXURE-I**

1. Full name of Contractor/s Construction firm and year of establishment.
2. Registered Head Office Address
3. Branch Office in India.
4. Construction of firm gives full details including name of Partners/Executive/s Power of Attorney holders etc.:
5. Particulars of registration with Government semi Govt Organization, public sector undertaking and local bodies etc.:
6. The bank account number, name of bank and bank specific code number (MICR/IFSC)

Note:- The information furnished above shall be supported by authentic documents including registration number of the firm. The copies of documents submitted shall be duly attested by Gazetted officers.

Signature of      Tenderer/s  
Dated -----

**Aggregate Abrasion Value**

(Based on IS: 2386 part IV-1963)

1. Apparatus.
  - 1.1 The abrasion test for track ballast shall be carried out using Los-Angeles machine.
  - 1.2 The Abrasive charge shall consist of 12 nos. cast iron or steel spheres approx. 48mm dia and each weighing between 390 and 445 gm ensuring total weight of charge as 5,000  $\pm$  25 gm.
  - 1.3 IS sieves of sizes 50mm, 40mm, 25mm and 1.70mm.
  - 1.4 Drying Oven.
2. Test Sample.
  - 2.1 The test sample of 10000 gm shall consist of clean ballast conforming to the following grading.
    - Passing 50mm and retained on 40mm square mesh sieve 5000 gm@
    - Passing 40mm and retained on 25mm square mesh sieve 5000 gm@@tolerance of  $\pm$  2% permitted.
  - 2.2 The sample shall be dried in oven at 100°C to 110°C to a constant weight (Weight 'A')
3. Test Procedure:

The test sample and the abrasive charge shall be placed in the Los-Angeles abrasion testing machine and the machine rotated at a speed of 20-33 revolutions/minute for 1000 revolutions. At the completion of test, the material shall be discharged and sieved through 1.70mm IS sieve.
4. Analysis and reporting of the Result:
  - 4.1 The material coarser than 1.70mm IS sieve shall be washed, dried in oven at 100°C to 110 °C to a constant weight and weighed (weight B)
  - 4.2 The proportion of loss between weight "A" and Weight "B" of the test sample shall be expressed as a percentage of the original weight of the test sample. This value shall be reported as:

$$\text{Aggregate Abrasion Value} = [(A-B)/A] \times 100$$

Signature of tenderer/s

Dated -----

**Aggregate Impact Value**  
(Based on IS: 2386 part IV-1963)

1. Apparatus.  
The apparatus shall consist of the following:
  - a) Impact testing machine conforming to IS: 2386 part IV-1963.
  - b) IS Sieves of sizes 12.5 mm, 10mm and 2.36 mm.
  - c) A cylindrical metal measure of 75mm dia & 50mm depth.
  - d) A tamping rod 10mm circular cross section and 230 mm length, rounded at one end.
  - e) Drying oven
2. Test Sample.
  - 2.1 The test sample shall be prepared out of track ballast so as to conform to following grading:
 

-----Passing 12.5mm IS sieve	100%
-----Retention 10mm IS sieve	100%
  - 2.2 The sample shall be oven dried for 4 Hours at a temperature of 100°C to 110°C and cooled.
  - 2.3 The measure shall be filled about one-third full with the prepared aggregate and tamped with 25 strokes of the tamping rod. A further similar quantity of aggregate shall be added and a further tamping of 25 strokes given. The measure shall finally be filled to overflowing, tamped 25 times and the surplus aggregate struck off, using and tamping rod as a straight edge. The net weight of the aggregate in the measure shall be determined to the nearest gm (weight's')
- 3 Test procedure:
  - 3.1 The cup of impact testing machine shall be fixed firmly in the position of the base of the machine and the whole of the test sample placed in it and compacted by 25 strokes of the tamping rod.
  - 3.2 The hammer shall be raised 380mm above the upper surface of the aggregate in the cup and allowed to fall freely on the aggregate. The test sample shall be subjected to a total of 15 such blows, each being delivered at an interval of not less than one second.
- 4 Analysis and reporting of the result.
  - 4.1 The sample shall be removed and sieved through 2.36mm IS sieve. The fraction passing through shall be weighed (weight "B") .The fraction retained on the sieve shall also be weighed (Weight C) and if the total weight (B+C) is less than the initial weight (weight") by more than one gm, the result shall be discarded and a fresh test made.
  - 4.2 The ratio of the weight of the fines formed to the total sample weight shall be expressed as a percentage.  
Aggregate Impact Value =  $(B/A) \times 100$
  - 4.3 Two such tests shall be carried out and the mean of the results shall be reported to the nearest whole number as the Aggregate impact value of the tested material.

Signature of tenderer/s

Dated -----

**Water Absorption.**

(Based on IS: 2386 Part III-1963)

1. Apparatus.  
The apparatus shall consist of the following:
  - a) Wire Basket- Perforated, electroplated or plastic coated, with wire hangers for suspending it from the balance.
  - b) Water tight container for suspending the basket.
  - c) Dry soft Absorbent cloth 75 x 45 cm size 2 Nos.
  - d) Shallow Tray of minimum 650 square cm area.
  - e) Air tight container of capacity similar to basket.
  - f) Drying Oven
2. Test Sample: A sample of not less than 200 gm shall be used.
3. Test procedure:
  - 3.1 The sample shall be thoroughly washed to remove finer particle and dust drained and then placed in the wire basket and immersed in distilled water at a temperature between 22°C to 32°C .
  - 3.2 After immersion the entrapped air shall be removed by lifting the basket and allowing it to drop 25 times in 25 seconds. The basket and sample shall remain immersed for a period of 24 ± ½ hours afterwards.
  - 3.3 The basket and aggregate shall then be removed from the water, allowed to drain for few minutes, after which the aggregate shall be gently emptied from the basket on to one of dry clothes and gently surface dried with the cloth transferring it to second dry cloth when the first will remove no further moisture. The stone aggregate shall be spared on the second cloth and exposed to atmosphere) away from direct sunlight) until it appears to be completely surface dry. The aggregate then shall be weighed(weight ("A"))
  - 3.4 The aggregate shall then be placed in an oven at a temperature of 100°C to 110°C for 24 hours. It shall then be removed from oven, cooled and weighed (Weight "B").
4. Analysis and Reporting of the Result.  
  
Water Absorption =  $[(A-B)/B] \times 100$
- 4.1 Two such tests shall be made and individual and mean results shall be reported.

Signature of tenderer/s

Dated -----

## **Annexure-D**

### **LIST OF APPROVED LABORATORIES :-**

- (i) S.S.E./P.Way Bhagat Ki Kothi, Jodhpur Division.
- (ii) Any Govt. Engg College, Polytechnic etc.
- (iii) Any Government Laboratory such as CPWD, MES, PWD, PHED, Irrigation etc.
- (iv) Any Government approved Laboratory.

Date-  
Place-

Signature of Tenderer/s  
Address-.....

**Certificate to be given by tenderer/s**

I here by undertake to supply the ballast from.....quarry, which has been got tested from the approved laboratory as listed in the tender documents. It is also certified that the total quantity of ballast to be supplied will conform to the laid down specification for track ballast. Any change in the source of supply will be intimated, in writing, to the administration in time, along with test report of the ballast, prior to actual supply thereof.

Date-  
Place-

Signature of tenderer/s  
Address.....