

**MASTER DOCUMENT FOR**  
**SPECIAL CONDITIONS FOR EXECUTION OF TRACK WORKS**

<b>SL NO</b>	<b>DESCRIPTION</b>
A	CONDITIONS FOR EXECUTION OF TRACK WORKS
B	SPECIAL CONDITIONS FOR EARTH WORK:-
C	PAINTING OF NEW RAILS ON CESS:
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E	SPECIFICATIONS AND SPECIAL CONDITIONS OF CONTRACT FOR DEEP SCREENING OF BALLAST
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G	SPECIAL CONDITIONS OF CONTRACT (MAINTENANCE OF TRACK )- TYPICAL FOR THE WORK – SAFETY RELATED TRACK WORKS

## **A. CONDITIONS FOR EXECUTION OF TRACK WORKS**

1. The Railway administration will not be responsible for the safety of contractor's labour engaged for their work and should be ensured that all the labour are medically fit with good eye sight so that they can safe guard themselves.
2. The Railway administration will not be responsible for the safety of contractor's Labour engaged for this work.
3. The lead for transportation of P-Way materials shall reckoned based on the shortest Railway route.
4. The contractor shall make his own arrangements for men, materials, tools, consumables etc., required for the work at his own cost and shall be responsible for safe working of trains at a restricted speed on work spots.
5. In the event of any accident at the work site and it is established during the departmental enquiry by the Railways that the accident occurred wholly or partly due to any act of tent amounting to negligence on the part of the Contractor or his labour in not adhering to the instructions of the Engineer-in-charge. The Contractor shall himself be liable for damage and also legal prosecution if loss of life is involved.
6. Track Running Meter (TRM) for the purpose of payments is measured on the centerline of the track, which includes rails on either side with sleepers and complete fittings.
7. The contractor is responsible for safe passage of trains. All trains will be allowed with the specific approval of SSE/SE/P.Way-in-charge in the portion of track under repairs by the Contractor. Any variation in this regard, the Contractor will be held responsible for all damages caused out of negligence manipulated by his staff.
8. The work to be carried out under traffic conditions. It is the responsibility of the Contractor to see that there is no detention or interruption to the movement of trains and 'No Claim' will be admissible towards loss of time/wastage of labour employed etc., that may be incurred by the contractor due to movement of trains. The rate quoted should cover all such contingencies.
9. Necessary speed restrictions for the trains will be imposed by the railway and look out man will be provided at railway's cost if required.
10. It is the responsibility of the contractor to arrange for watchman to guard against theft etc., till that time the released materials are handed over to Engineer - in - charge.
11. Deep Screening has to be done in accordance with the instructions laid down in permanent way manual vide para No. 637 ( for Machine deep screening) of Indian Railway Permanent Way Manual 2020 and Para Para 636 (for manual deep screening) Manual of instruction of long welded rails 1196
12. Packing should be done as per packing schedule mentioned in Para 607 of P.Way manual. The contractor has to attend the picking up of slacks in this period as directed by the Engineer-in-charge and no extra payment will be made for the same.
13. For every stage of lift the ballast/cinder/earth to be made up uniform in all rails. Ballast left over and fallen on slopes to be picked up and put into the track. After completion of lifting the cess should be brushed up by making up proper slopes to drain out rain water.
14. PSC sleepers shall be handled with utmost care with specially designed hooks, clamps, pipes, bars etc., to ensure that no damage is caused to PSC sleepers while handling and laying.
15. Fittings such as composite liners, pandrol clips etc., required for the work will be handed over to the contractor at SSE Stores and the contractor has to transport them to the site of work and he shall be responsible for any loss or deficiency during transportation and execution of work.
16. The existing sleeper fittings shall be neatly removed with utmost care to avoid any damage to the sleepers and fittings. All released fittings shall be handed over to SSE/P.Way/Concerned at his depot without any shortage/loss and stacking neatly classification wise and material wise. Cost will be recovered from the contractor bill for any loss/change/damage for the released as well as new material.
17. **REMOVAL OF RELEASED P.WAY MATERIALS FROM WORK SITES:** On completion of TRR/TSR/TTR works only 70% payment of the item for TRR/TSR/TTR work will be arranged. Balance 30% payment will be made only after the entire released material is trucked out fully from mid section to the nominated location either at the manned level crossing gate or at the nearest Railway station where guarding facility and space is available within the command length of the work so awarded to the contractor as decided by the Engineer-in-charge and stacked neatly. ADEN of the section will have to give certificate to the effect along with the bill for payment of balance 30% amount.

Contractor has to arrange for the stacking of released materials (Classification wise) at those locations as directed by the Engineer-In-charge or his representative. The decision of the engineer-in-charge on the locations is final and binding.

The date of handing over of released materials by the contractor along with DMTR Nos. should be mentioned in the certificate given by ADEN to the effect that all the released P.Way material is trucked out fully from mid section along with the bill for payment of balance 30% amount.

18. The block granted for any track work may be cancelled on some days due to operational requirement of Railways. The tenderer should take these into account and quote the rates. No. compensation/claim will be entertained for cancellation of block.
19. The sleepers, rails and fastenings will be supplied by the Railways at nominated places for carrying out the work.
20. All the released materials as per the inventory taken by the ADEN/SSE/P.Way has to be trucked out and shall be handed over to the department depot by the contractor. If any loss or damage occurred for the released materials, the cost of the same which will be recovered from the contractor's bills as per the extent rules and certificate in the bill has to be furnished by the ADEN/SSE/P.Way stating that all the released materials are returned and accounted for the relevant register duly giving page No and date.
21. No plant or machinery will be supplied by the Railway for this work. It is the contractor's responsibility to supply at his own cost, any materials and plant, machinery required for this work.
22. For any items of work in the event of these being any conflict in the working or drawing referred to in the schedule and specifications of work, the decision of Engineer-in-charge will be final in all such matters.
23. If due to any reason, the Railway is not in a position to make available the Railway Land the Railway Engineer-in-charge of the work may permit the contractor to erect at his own cost shed, sheds or secure private accommodation outside the Railway premises. In such a case, the contractor may be permitted to take the Railway materials required for the work outside the Railway premises and to store in the shed so erected or private accommodation, so secured. It shall be the responsibility of the contractor to keep the entirely separate from the Contractor's materials and the Railway shall be at liberty to inspect the same time to time.

#### **24. CONTRACTOR'S SUPERVISION**

- 24.1. The Contractor shall employ and post at site a technical supervisor who should be adequately qualified and well experienced in execution of Permanent Way Works. The name, particulars of technical qualifications and record of experience of the supervisor employed should be advised to the Engineer-in-charge. If in the opinion of the Engineer-in-charge the supervisor is not fit to be in-charge of the work should be forth with replaced. In this matter, the opinion of the Engineer-in-charge will be final and binding on the contract.
- 24.2. No work on the track should be done unless and until the PWI or his authorized Engineer-in-charge, Contractor's technical supervisor is present at site.
- 24.3. The contractor should engage qualified engineer/retired P.Way Inspector conversant with P.Way work to supervise at his cost. Work should be taken up only in the presence of the Engineer nominated for this work.

#### **25. THE MINIMUM PROGRESS FOR THE COMPLETE TRACK RENEWALS AND THROUGH SLEEPER RENEWALS AND THE PENALTIES FOR SLOW PROGRESS IS AS UNDER:-**

25.1.	For CTR and TSR works	3 (three) kms per month.
25.2.	For TRR and Deep screening work	4 (four) kms per month

For every track running meter of shortage, recovery of the following rates should be made from the contractor's bills.

- (a) Complete track renewals Rs.10/- per Track Running Meter of shortage.
  - (b) Through sleeper renewals Rs.8/- per Track Running Meter of shortage
  - (c) Deep screening Rs.6/- per Track Running Meter of shortage
  - (d) Through rail renewals Rs.4/- per Track Running Meter of shortage
26. The existing rails, sleepers and fastenings from the track shall be removed including excavation, etc., with utmost care to avoid any damage to the rails, sleepers, and fastenings, etc., shall be neatly removed re-laid and balance of released materials should be handed over to the PWI concerned at his depot.
  27. The contractor shall carry out the work in such a manner to avoid any inconvenience and disturbance to Railway working and to the public using the railway premises and will adjust the program of the work accordingly in consultation with the engineer-in-charge.
  28. At any stage during the execution of work, if contractor fails to employ adequate labour to complete the works in traffic blocks, to raise the speed by rear packing, and restore traffic etc., as decided by the Engineer in charge, such work will be carried out by deploying departmental labour. Cost of such labour shall be recovered from contractor's bill as per extent rules. Action as per GCC in clause 62 will be taken.
  29. Vehicles and equipment of contractors can be drafted by Railway administration in case of accidents/natural calamities involving human lives. However, the number of hours, the equipment put to use is to be compensated as per prevailing rates inclusive of fuel charges on actual basis.

#### **B. SPECIAL CONDITIONS FOR EARTH WORK**

1. The quantities shown in the tender schedule are approximate and shall be operated in full or part at the discretion of the Engineer in charge. Payment will be made based on the actual quantities operated/executed.
2. The Railway administration will not be responsible for the safety of contractor's Labour engaged for this work.
3. The contractor shall make his own arrangements for men, materials, tools, consumables etc., required for the work at his own cost and shall be responsible for safe working of trains at work spot.
4. In the event of any accident at the work site and it is established during the departmental enquiry by the Railways that the accident occurred wholly or partly due to any act of negligence on the part of the Contractor or his labour not adhering to the instructions of the Engineer-in-charge, the Contractor shall be liable for damage and also legal prosecution if loss of life is involved.
5. The contractor is responsible for safe passage of trains. All trains will be allowed with the specific approval of SSE/SE/P.Way-in-charge in the portion of track under repairs by the Contractor. Any variation in this regard, the Contractor will be held responsible for all damages caused by negligence of his staff.
6. The work has to be carried out under traffic conditions. It is the responsibility of the Contractor to see that there is no detention or interruption to the movement of trains. No Claim will be admissible towards loss of time/wastage of labour employed etc. that may be incurred by the contractor due to movement of trains. The rate quoted should cover all such contingencies.
7. Necessary speed restrictions for the trains will be imposed by the railway and look out man will be provided at railway's cost if required.
8. Conservancy charges as applicable and as modified from time to time will be recovered from Contractor's running bills.
9. Sectioning to profile, leveling, dressing of earthwork should be done in layers including breaking up of clods as per specification.
10. The contractor/tenderer has to make his own arrangements for obtaining the earth from private land owners by paying necessary fees etc. No extra payment will be made or entertained towards the same or any pathway if required to be formed for

- execution.
11. Barrow area for excavating soil for earthwork should be at least 35 mts. away from the Railway land boundary.
  12. The railway may collect samples of the earth randomly and get them tested at approved/ railway laboratory for its suitability. If the soil is found not suitable, the contractor should not use it and should remove it from railway premises.
  13. While doing earth work, care should be taken that excessive work is not carried out either in the width or in the height of the cess. No payment will be done for extra quantity done. Proper template should be used and level pegs should be driven in advance.
  14. Quality of Earth works should be as per RDSO guide lines / specifications vide No. RDSO /2020/GE:IRS-0004,Sept.-2020.
  15. Rate to be quoted by the contractors should be inclusive of Royalty, seignorages, taxes etc., complete as applicable to the state concerned.
  16. B.C. Soil of any kind shall not be permitted. Suitable soil may not be available in the nearby area of site. In such case, suitable soil has to be brought from long distance. Sometimes, approach road may not be available. Tenderer, therefore, is advised to visit the location of work before participating in the tender.
  17. No extra payment will be made for jungle clearance and repairs to service road or for formation of road if required for leading/transporting of earth to cess location.
  18. Payment for the earth work will be made for the quantity calculated based on cross sectional measurements and deductions as per specifications.
  19. Contractor should quote the rate duly considering the royalty, seignorage charges as applicable in Telangana, Andhara Pradesh, Karnataka & Maharastra state and revision thereof from time to time.
  20. The cess work should be carried out at the locations indicated in the name of the works. Any change of quantity/location requires prior approval of Sr. DEN/DEN concerned. The reasons for change of location shall be kept on record.
  21. Before executing the work, ADEN/SSE (Works/P.Way) should obtain numbered level books, signed by Sr. DEN/ DEN, from Divisional office. The level books should be submitted to the division after recording the initial levels. After that, proposed levels along with graph sheets duly signed by SSE (Works/P.Way), ADEN, and Contractor should be submitted.
  22. After completion of earth work, new level books should be collected from Divisional office and final levels should be recorded. The level books with final levels, graphs, calculation sheets duly signed by SSE(Works/P.Way), ADEN and Contractor should be submitted to division. Graphs and calculation sheets in excel format should also be submitted.
  23. The signed copies of levels, graph sheets, calculations sheets should be uploaded in PDF format to IRWCMS while processing bills.
  24. If level books are not submitted as mentioned in the above para21, 22 & 23, the bills will not be considered by divisional office.

### **C. PAINTING OF NEW RAILS ON CESS**

#### **1. Surface preparation:**

- (a) The surface preparation of rails is one of the most important pre-requisites for the painting to serve the purpose. Sufficient care should therefore be taken in preparing the surface. The surface shall be made free from oil, grease and dust. The surface shall be rubbed with wire brush and sand paper /emery paper. The tools may include scrappers, wire brushes, emery/sand paper, pumice stones, etc. or power operated equipment. Wire brushing should invariably be done at the end so as to obtain a uniform rubbed surface. The surface prepared may be checked by visual observation for uniformity of surface.

- (b) Surface preparation shall not be done unless the approved paints of sufficient quantities are available in stock at site. The quality of surface preparation at weld collars, liner contact areas shall be the same as that of rest of the surface. Generally weld collars and liner contact areas are the most corrosive prone areas from which fatigue failures develop.
- (c) Surface preparation/painting shall not be done in the following conditions.
  - (i) When the ambient temperature is below 10 degree centigrade or above 50 degree centigrade
  - (ii) In rainy season
  - (iii) During night
  - (iv) In winter before 8.00 a.m.
  - (v) In summer between 11.00 a.m. and 3.00 a.m. on areas that are likely to be exposed to direct Sunlight
  - (vi) Extremely wind/moist/dust blowing conditions
- (d) Chemicals should not be used for surface preparation

## 2. Painting scheme:

- (i) 1<sup>st</sup> Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.
- (ii) 2<sup>nd</sup> Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.

NOTE: 1. Surface preparation by way of cleaning, wiping, brushing may be required between successive coats to remove dust, mud, night-soil etc.

2. The thickness of the film mentioned above is to be ensured at:

- (i) Junction of web flange
- (ii) Liner contact area
- (iii) Flange curve near foot

## 3. Supply of paints:

Paints shall either be procured through stores department or supplied by the contractor against painting contracts. Paints manufactured by the following firms of repute alone shall either be procured or be permitted to be used by contractors through composite contract involving supply and painting of rails.

Paints for painting of Wagons, Bridges & Other Applications (IS:102, IS:104, IS:123, IS:158, IS:341, IS:2074, IS:9862, IS:5666, IS:3678, IS:2339, IS:3607, IS:8982)	
1	M/s. Advance Paints Ltd., Advance House, Plot 'A' Makwana Road, ARK Industrial Compound, Marol Naka, (E) Mumbai - 400059
2	M/s. AanupamEnterprises, 208 Mahathma Gandhi Road, (1st floor) Kolkota - 700007
3	M/s. AlkalIndustrial Paints (P) Ltd., 46 PuranaQuila, Lucknow
4.	M/s. Asian Paints (I) Ltd., 6A Shanti Nagar, Shantacruz (Fast), Mumbai -400 058.
5	M/s. Asian Paint & Varnishes Works (P) Ltd., 1 Rose Mary Lane, Howrah-711 101
6	M/s. Asian Industrial & Manufacturing Co., 36, Standrd Road, Kolkota - 700 017

7	M/s. Berger Paints India Ltd., Berger House, 129 Park Steet, Kolkota - 700 017.
8	M/s. Century Paints & Varnish Works, 34-B, Debendra Chandra Dey Road, Kolakota - 700 016
9	M/s. Doss Paints Mfg., Co, 62/1, RaghapKolay Lane, Salkia, Howrah - 711 106
10	M/s. Deb Paints (P) Ltd., Methopara P. O.Ganganarar, Sistt,24 Paraganas (N)-743250 (WB)
11	M/s. Jenson &Nicholsom (I) Ltd, 225, AcharyaJagadish Chandra Bose Road, Kolkota-20
12	M/s. Kalinga Paints & Chemical Indutries (P) Ltd., Industrial area, Rourkela - 769004, Orissa
13	M/s. Modi Industries Ltd., (Paint Section) Modi Nagar - 201204 (UP)
14	M/s M.P. Paints (P) Ltd., 435-Bm, Sector C, Urla Industrial Area, Raipur - 493221 (CG)
15	M/s. P.K. Industries, Sodal Road, Jallandhar - 144004
16	M/s. Puskar Paint Industries, BadriSarrafBhavan, B-92, Sector-C, Mahnagar, Lacknow-226006
17	M/s. Punjab paint Color & varnish works, 123/52-9, Fajalgunj, Kanpur - 208012
18	M/s. Raco Mercantile Traders, B-2, Govt., Industries Estate, Tikatora, Lacknow - 226011
19	M/s. Rahul Paints, Mohan Road, TikaitRaiTalab, Lacknow - 226017
20	M/s. United Anitine& Chemicals Co., Pvt. Ltd., 56 Rose Mary Lane, Howrah - 71001 (WB)
21	M/s. Vibgyor Paints and Chemicals, Raj Flats, 42/9 Harrington Road, Chennai - 600030
22	M/s. Western India Paints &Colour Co(P) Ltd., 25/2, Natha Muni Street, T.Nagar, Chennai - 600017
23	M/s.NeoRadiant Paints Pvt Ltd., RIC Industrial Estate, Durgapur - 713212 (WB)
24	M/s. Durgapur Paints, RIC Estate, G.T. Road, Durgapur - 713212 Distt. Durdwan

The Contractor/Supplier shall furnish to the Railway the date of manufacture of the paint as certified by the manufacturer. The labels on the containers should contain information regarding the date of manufacture, batch No., etc.

#### 4. Application of paint:

- (i) First coat of painting shall be done only after the surface preparation is approved by the PWI/ADEN. Paint shall be applied on dry surface free from any type of moisture and shall not be done under the conditions mentioned earlier in 1© of Para C.
- (ii) Paint shall be mixed well in the container before it is applied. Over mixing shall not be done. Visible air bubbles or foam formation shall totally be avoided.
- (iii) Brush shall not be less than 2" (5 cm.) in width and should have good flexible bristles. If a new brush is used, it should be soaked in raw linseed oil for at least 24 hours before using it for painting. The brushes shall be cleaned at the end of each day's work.
- (iv) Dust settled after scraping shall be cleaned before applying paint.
- (v) Brush shall be held at 45 degree to the surface and painting should be done with several light vertical/lateral strokes turning the brush frequently to cover the whole surface. After this, the brush shall be used cross-wise for a complete coverage. Finishing should be done with vertical/lateral strokes to achieve uniform and even surface.
- (vi) Rags, waste cotton, cloth or similar articles should not be used for applying paint.

- (vii) The coat of paint applied shall be such that the prescribed dry film thickness is achieved by actual trial for the particular brand of paint. The applied coat of paint shall be uniform, and free from brush marks, sags, blemishes, scattering, crawling, uneven thickness, holes, lap marks, lifting, peeling, staining, cracking, checking, scaling, holidays and alleghating.
- (viii) Each coat of paint shall be left to dry till it is sufficiently hard to receive the subsequent coat. The time lag between the completion of the primer coat and the commencement of the covering coat shall not exceed 7 days. The drying time shall not be less than 3 days in the case of Red Lead Paint. Each coat of paint shall be inspected and certified by PWI/ADEN before the subsequent coat is applied.
- (ix) The thickness of the dry film shall not be less than the specified thickness. If the thickness is found less than specified thickness, additional coat of paint has to be applied to bring it to the required thickness. The thickness shall be measured at various locations to ensure that the minimum prescribed thickness is attained all over the painted areas. Engineer-in-charge should satisfy himself that the thickness obtained is not less than that specified.
- (x) Painted surface shall be smooth and uniform in colour. The thickness of each coat of paint shall be measured by ELCO Meter.
- (xi) The time lag between successive operations indicated below shall under no circumstances be exceeded.
  - (a) Between completion of surface preparation standard and the Application of primer coat. : 4 hours.
  - (b) Between the primer coat and the 1<sup>st</sup> finishing coat. : 7 days
  - (c) Between the 1<sup>st</sup> finishing coat and the 2<sup>nd</sup> finishing coat. : 7 days

## 5. Testing of the paint

- (i) The paints/painting shall be tested by the following instruments in the filed by PWI/ADEN in addition to the tests conducted by CMT/LGD or any national Test house.
  - (a) Weight per litre cup (100 ml. Capacity stainless steel)
  - (b) Ford Cup No.4
  - (c) Scratch Hardness Test Hand Operated preferably with lighting arrangement
  - (d) Flexibility and Adhesion Test with ¼" (6.25 mm) dia rod.

Representative samples from each Batch of paint shall be tested by either the Chemist & Metallurgist / Lallaguda (Secunderabad) or at any other National Testing Laboratories, whichever is convenient at the cost of the Contractor. If the tested samples of paint do not conform to the ISI Specifications, the whole lot of paint pertaining to that batch shall be rejected.

- (ii) Paints supplied by the Stores Department shall also be tested and used only if they are found suitable. Paints, which are either over-age or not conforming to specifications, shall be scrapped and returned to stores for disposal.

## 6. PAINTING OF IN-SERVICE RAILS

- 6.1. Surface preparation: The surface preparation may be carried out as described at Para A(1.0) as in case of new rails. In addition, loose paint/flaked paint should also be removed.



## 6.2. Painting scheme

- (iii) First Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.
- (iv) Second Coat: Anti corrosive bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns.

6.3. Paints shall either be procured through Stores Department or supplied by the Contractor/Agency against painting contracts. Paints manufactured by the following Firms approved by RDSO and ICF alone shall either be procured or be permitted to be used by the Contractors through composite contracts involving supply and painting of rails.

Paints for painting of Wagons, Bridges & Other Applications (IS:102, IS:104, IS:123, IS:158, IS:341, IS:2074, IS:9862, IS:5666, IS:3678, IS:2339, IS:3607, IS:8982)	
1	M/s.Advance Paints Ltd., Advance House, Plot 'A' Makwana Road, ARK Industrial Compound, Marol Naka, (E) Mumbai - 400059
2	M/s. AanupamEnterpriises, 208 Mahathma Gandhi Road, (1st floor) Kolkota - 700007
3	M/s. AlkalIndustrial Paints (P) Ltd., 46 PuranaQuila, Lucknow
4.	M/s. Asian Paints (I) Ltd., 6A Shanti Nagar, Shantacruz (Fast), Mumbai -400 058.
5	M/s. Asian Paint & Varnishes Works (P) Ltd., 1 Rose Mary Lane, Howrah-711 101
6	M/s. Asian Industrial & Manufacturing Co., 36, Standrd Road, Kolkota - 700 017
7	M/s. Berger Paints India Ltd., Berger House, 129 Park Steet, Kolkota - 700 017.
8	M/s. Century Paints & Varnish Works, 34-B, Debendra Chandra Dey Road, Kolakota - 700 016
9	M/s. Doss Paints Mfg., Co, 62/1, RaghapKolay Lane, Salkia, Howrah - 711 106
10	M/s. Deb Paints (P) Ltd., Methopara P. O.Ganganarar, Sistt,24 Paraganas (N)-743250 (WB)
11	M/s. Jenson &Nicholsom (I) Ltd, 225, AcharyaJagadish Chandra Bose Road, Kolkota-20
12	M/s. Kalinga Paints & Chemical Indutries (P) Ltd., Industrial area, Rourkela - 769004, Orissa
13	M/s. Modi Industries Ltd., (Paint Section) Modi Nagar - 201204 (UP)
14	M/s M.P. Paints (P) Ltd., 435-Bm, Sector C, Urla Industrial Area, Raipur - 493221 (CG)
15	M/s. P.K. Industries, Sodal Road, Jallandhar - 144004
16	M/s. Puskar Paint Industries, BadriSarrafBhavan, B-92, Sector-C, Mahnagar, Lacknow-226006
17	M/s. Punjab paint Color & varnish works, 123/52-9, Fajalgunj, Kanpur - 208012
18	M/s. Raco Mercantile Traders, B-2, Govt., Industries Estate, Tikatora, Lacknow - 226011
19	M/s. Rahul Paints, Mohan Road, TikaitRaiTalab, Lacknow - 226017
20	M/s. United Anitine& Chemicals Co., Pvt. Ltd., 56 Rose Mary Lane, Howrah - 71001 (WB)
21	M/s. Vibgyor Paints and Chemicals, Raj Flats, 42/9 Harrington Road, Chennai - 600030
22	M/s. Western India Paints &Colour Co(P) Ltd., 25/2, Natha Muni Street, T.Nagar, Chennai - 600017
23	M/s.NeoRadiant Paints Pvt Ltd., RIC Industrial Estate, Durgapur - 713212 (WB)
24	M/s. Durgapur Paints, RIC Estate, G.T. Road, Durgapur - 713212 Distt. Durdwan

## 7. Method of painting

Impose SR of 50 KMPH in a selected stretch. Start the work at around 08.00 hrs. Remove only alternate ERCs either on gauge face side or on non-gauge face side. At no point of time both inside and outside ERCs even on alternate sleepers should be removed. On carrying out surface preparation, and apply bituminous black paint confirming to IS 9862-1981 to a thickness of 100 microns. Allow it to dry for 8 hours. Subsequently apply the second coat to a thickness of 100 microns and allow it to dry for 8 hours. Then provide liner and ERCs duly greasing insert holes and central leg of ERC. All the liners and ERCs shall also be painted with anti-corrosive black after cleaning their surface. Similarly, under the same caution order, paint the rails, liners, and ERCs at the left over alternate areas.

## 8. Frequency of painting of Rail

- 8.1. **Painting of new rails on cess:** All new rails shall be painted before they are laid in track with Anti corrosive bituminous black paint confirming to IS 9862-1981 as indicated under painting of rails on cess vide Para -(A).
- 8.2. **Painting of in-service Rails:** Subsequently once in a year painting shall be carried out for the inside gauge face of rails including foot and web and excluding gauge face surface
- 8.3. **Non-gauge face side foot of the rail including web and non-gauge face and excluding rail top should be painted once in 3 years.**

## D. MAINTENANCE OF FIELD-CUM-SITE ORDER BOOKS

- (i) Field-cum-site order books shall invariably be maintained for the painting work. Two separate Field Books shall be maintained, so that one Book can be with the Inspector concerned, while the other book can be sent along with the Bill and M.Book. All the field books shall sent along with the final bill. They shall be finally filed in divisional office.
- (ii) Inspector-in-charge shall record certificates in both Field books and M.Books on completion of each stage of work i.e., surface preparation, primer coats, 1<sup>st</sup> finishing coat and 2<sup>nd</sup> finishing coat in token of the completion of each stage of work confirming that each operation is done satisfactorily and completely. The minimum thickness of paint for each coat has to be recorded by the Inspectors and the ADENs shall test checks the same.
- (iii) The certificate to be forwarded by the Inspectors and ADENs shall read as under:  
"Certified that Primer of Km\_\_\_\_\_ to Km\_\_\_\_\_  
1<sup>st</sup> finishing coat of Km\_\_\_\_\_ to Km\_\_\_\_\_  
2<sup>nd</sup> finishing coat of Km\_\_\_\_\_ to Km\_\_\_\_\_  
  
is satisfactorily completed in full (except for \_\_\_\_\_)  
The total quantity of paint consumed is \_\_\_\_\_ Lits. And the minimum thickness of the paint is \_\_\_\_\_ microns."
- (iv) Field-cum-site order book shall contain the following information:
  - (a) Section, Km., TP, LH/RH, Rail, Gauge/Non-gauge face side
  - (b) Contractor's Name and Address: Details of Agreement
  - (c) Name of manufacturer of the paint, Specifications, Batch No., Manufacturing Date, expiry date, Reference to certificate by the Chemist and Metallurgist, Lallaguda or certificate issued by National Test House
  - (d) Date of commencement and completion of each of the following operations:  
Surface preparation  
Painting 1<sup>st</sup> Finishing coat  
Painting 2<sup>nd</sup> Finishing coat
- (v) (a) The paints supplied shall be taken into account by the SSE and issued back

- to the agency for painting as per requirement.
- (b) The Agency on completion of the work shall return the empty drums to the SSE, who shall ensure that the empty drums are kept safely for a minimum period of 3 months after completion of work and thereafter return the same to Stores duly obtaining concurrence from ADEN of the section.
- (vi) Results of tests conducted by PWI on Paint shall also be recorded in the Field/Site Order Books. A minimum of two tests per batch of paint shall be conducted at random.

## **E. SPECIFICATIONS AND SPECIAL CONDITIONS OF CONTRACT FOR DEEP SCREENING OF BALLAST**

### **1. SCOPE OF WORK**

- 1.1. Deep screening of ballast below the bottom of the sleepers up to formation level and putting back the screened ballast lifting of track to provide the specified cushion, Initial alignment, lifting of track to provide the specified cushion, initial alignment, lifting and leveling the track to proper longitudinal profile, initial packing and additional packing of track as directed by the Engineer or his representative complete with disposal of muck/spoils with a lead of 100 M including all lifts/descents
- 1.2. Spreading and boxing of ballast to standard profile.
- 1.3. Bringing the cess to correct level in relation to the final level as directed by the Engineer-in-charge

### **2. SPECIAL CONDITION OF CONTRACT:**

- 2.1. The work of deep screening should be carried out in accordance with the provisions given under Para 346, 637 of Indian Railway Permanent Way Manual, 2020.
- 2.2. Before deep screening work is started, longitudinal profile of track should be taken and final profile marked at 30m intervals on pegs duly taking into formation /cess level and the required ballast cushion. This will be done by the Railways Engineer - in - charge. The contractor shall maintain the rail level after deep screening as indicated on the pegs or as directed by the Engineer- in- charge.
- 2.3. The screening should be taken up to cover full width of ballast section. The ballast above the formation only should be taken up for screening. Any deficiency of ballast cushion should be made good by lifting the track to the longitudinal levels decided after proper survey. No extra payment will be paid for such subsequent lift involved to achieve the required clean cushion.
- 2.4. The work of deep screening includes removal of ballast in cribs, shoulders, core up to the formation levels as directed by the Engineer-in-charge. The ballast so removed should be screened by using portable inclined ballast screens with 25 mm openings. Wire baskets for screening are not permitted. Muck / spoils should be disposed off as directed by the Engineer - in - charge for making up the cess.
- 2.5. Deep screening work must be organized with independent screening, reclaiming and finishing parties. Each party should have adequate manpower.
- 2.6. Wooden blocks and tapered wedges should be used as soon as the crib ballast is opened out.
- 2.7. During screening of ballast on Embankment, inclined screens should be positioned at the edge of the formation with the inclined leg resting on the slope so that the muck is thrown on the slope and screened ballast is collected on the cess. In cuttings, muck from the screened ballast should be collected in baskets/bags and disposed beyond end of the cuttings. Care should be taken that the muck does not get mixed with the cleaned ballast. The muck should not be dumped on slopes of cuttings, in side drains, and in catch water drains.
- 2.8. A formation cross slope of 1 in 30 should be ensured to get proper drainage.
- 2.9. No ballast is to be washed in slopes and in cuttings, while carrying out the above operations.
- 2.10. The contractor should carry out digging, screening, leveling the track and rough

packing with the screened ballast adequately so as to pass the trains at 20 KMPH . These works shall be completed on the first day for the length taken up for screening. The rate for deep screening includes shifting and squaring of sleepers to the correct spacing, removal/renewal of fittings, re-fixing of fittings, re-packing.

2.11. The quoted rate for each item of schedule is all-inclusive.

### 3. SPEED RESTRICTION AND SAFETY

- 3.1. Speed restrictions required for the safety of train traffic will be arranged by the Engineer-in-charge. No work on the track should be commenced until PWI has imposed the necessary speed restrictions and erected Speed indicators. No work should be done by the contractors without the presence of Railway supervisor nominated by Engineer-in-charge.
- 3.2. Long length of track under speed restrictions should be avoided.
- 3.3. If the contractor fails to employ adequate labour for attention to the track so as to permit uninterrupted traffic at the prescribed speed, the railway will take action to employ such labour as may be necessary at the risk and cost of the contractor.
- 3.4. In the event of any accident at the work spot, the departmental enquiry or enquiry by C.R.S. will be held. If it is established after the enquiry that the accident occurred wholly or partly due to any act tantamount to the negligence on the part of the contractor or his labour, the contractor shall render himself liable for all the damages and also legal prosecution for loss of life and property involved.
- 3.5. For all works on the running track or adjacent to the running track, the protection of work site shall be ensured by the Railway. However, the contractor will provide the necessary look out men to ensure safety of these workmen.
- 3.6. The track should be maintained by the contractor for a period of 45 days after raising the speed to 100 kmph on completion of final round of through packing.

### 4. TRACK STANDARDS:

- 4.1. The track parameters which shall be attained after deep screening and final packing should be within the following tolerance:

Parameter	Details	Limiting value
Gauge	Sleeper to sleeper variation	+ or - 2 mm
Joints	Low Joints	Not Permitted
	High Joints	Not over + or - 20 mm
4.2. A	Squareness of joints .On straight	+ or - 10 mm
tSpacing sleepers	With respect theoretical spacing	+ or - 10 mm
lCross levels	To be recorded on every 4th sleeper	+ or - 3mm
tPacking	To be checked by canneaboule	Not more than 20% loose
eAlignment	On straight 10 m chord	+ 2 mm
r	On curves (20 mtrs curve	-2mm
m	Station to station versine variation	shall not exceed 20 mm or 20% of the versine in circular portion whichever is more
d		

ate stages of speed relaxation also, the above standards may be attained to the extent feasible. The decision of the Engineer-in-charge in this regard shall be final.

## 5. TOOLS AND EQUIPMENTS

5.1. The following essential stools and equipment required for the execution of the work should be arranged by the contractor at his own cost.

- (1) Screen with 25mm size openings
- (2) Gauge-cum-levels
- (3) Wooden squares
- (4) Cane baskets properly gunny lined
- (5) Wooden blocks
- (6) Mallets/hammers
- (7) Crow bars
- (8) Boares
- (9) Shovels and wire claws

5.2. The contractor should bring tools and other equipment to the site at his own cost.

## 6. PACKING SCHEDULE:

### 6.1. PACKAING SCHEDULE FOR MAIN LINE

Kms	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Speed	20 Kmph Kp P1 P2				45 Kmph 6 days picking up slacks						75 Kmph 9 days picking up slacks							
Date				Description of work											Speed restriction in Kmph			
1st day				TSR including kutchra packing of ballast											20 Kmph			
2nd day				1st through packing with proper alignment and surfacing of track														
3rd day				2nd through packing with proper super elevation to curves and boxing the track to the proper profile														
4th day to 5th day				Picking up slacks as required											45 Kmph			
10th day				3rd through packing														
11th day to 19th day				picking of slacks														
20th day				4th through packing											75 Kmph			
21st day to 30th day				Normal sectional speed to be restored														

### 6.2. PACKAING SCHEDULE FOR LOOP LINE:

Kms	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Speed	20 Kmph Kp P1 P2				30 Kmph 6 days picking up slacks P3 9 days picking up slacks P4													
Date		Description of work												Speed restriction in Kmph				
1st day		TSR including kutchra packing of ballast												20 Kmph				
2nd day		1st through packing with proper alignment and surfacing of track																
3rd day		2nd through packing with proper super elevation to curves and boxing the track to the proper profile																

4th day to 5th day	Picking up slacks as required	30 Kmph
10th day	3rd through packing	
11th day to 19th day	picking of slacks	
20th day	4th through packing	

Kms	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Speed	20 Kmph Kp P1 P2				45 Kmph 6 days picking up slacks						75 Kmph 9 days picking up slacks							

Date	Description of work	Speed restriction in Kmph
1st day	TSR including kutchu packing of ballast	20 Kmph
2nd day	1st through packing with proper alignment and surfacing of track	
3rd day	2nd through packing with proper super elevation to curves and boxing the track to the proper profile	
4th day to 5th day	Picking up slacks as required	45 Kmph
10th day	3rd through packing	
11th day to 19th day	picking of slacks	
20th day	4th through packing	75 Kmph
21st day to 30th day	Normal sectional speed to be restored	

## 7. CONDITIONS FOR PRE AND POST TAMPING WORK:

### a) Pre tamping operation:

- Marking on rails and sleepers for improving the track parameters will be done by Railways.
- Railhead ballast to be cleared for free rolling of lifting rollers by Contractor.
- Heaping up of ballast in tamping zone to be done by Contractor.
- Squaring of sleepers for the correct spacing to be done by Contractor.
- Deficient fittings and fastenings to be made good, and all fittings to be properly tightened to be done by Contractor.
- Worn out and damaged fittings to be replaced by the contractor.
- Low/pumping joints to be packed properly by manually before tamping by contractor.
- Removing of wooden blocks provided for supporting the rail/welds temporarily for tamping purpose by contractor.
- Removing of wooden blocks provided for supporting rail/welds/check rails on curves/LC including open ing gate, guard rails and tie angles provided at SEJ and OHE/S&T bond set c. temporarily for tamping purposes by contractor.

### b) During tamping operation:

- Work to be carried out only in traffic block period.
- Contractor to collect any machine parts fallen and handover to Railways.
- Shoulders ballast should be compacted by manually if required.

### c) Post tamping operation:

- Rear portion to be checked the gauge, cross levels, alignment and however under the supervision of Railway's representative. If any differences more than the tolerances to be attended as per Engineering charge at site.
- Re fixing of wooden blocks, fishplates, check rails on curve/LC guard rails, and tie angles, OHE

and S&T bends etc. at original places/position.

- While re fixing then greasing / oiling to be done as required. (grease & oil will be supplied by Railway).
- In case of level crossing road surface to be made good.
- Voids left by tamping tools to be filled with ballast.

## F. CONDITIONS FOR TRACK BALLAST :

### 1. SPECIAL CONDITIONS FOR SUPPLY AND LOADING OF BALLAST BY MECHANICAL MEANS

- 1.1. The tenderer should carefully read the conditions of the tender regarding earnest money and security deposit, validity period, completion time, average monthly supply and should satisfy himself by site inspection that he is in a position to supply ballast in accordance with the conditions (Conditional tenders are liable to be rejected outright). Contractor shall be responsible for following the provisions of Mining Act. The Railway will not be responsible for infringement of any of its provisions.
- 1.2. **Sample and Quality:** The ballast should be of approved quality from hard and durable stone angular along edges/corners conforming to **Specifications for Track Ballast IRS-GE-I-June 2016**. The contractor must mention the location of quarries from which ballast is proposed to be procured.
- 1.3. Ballast not conforming in any respect as laid down in the specifications shall be rejected at the discretion of the Engineer. For other purposes such as size, shape, gradation, sieve analysis, strength, etc. specification attached at Annexure-A Specifications for Track Ballast IRS-GE-I-June 2016 will be followed. The ballast/stone extracted from the quarry site will be subjected to various tests as laid down in specifications, and such tests shall be done at the cost of contractor in the technical institutes specified by the Engineer. All tests subsequent to the award of contract shall be done at Railway's cost. The ballast supply at all times should conform to the Specifications for Track Ballast IRS-GE-I-June 2016.
- 1.4. **Breaking:**  
Breaking of ballast should be carried out in the quarry area by the contractor by mechanical crushers to be installed outside Railway land. The Railways will not arrange any electrical power for running the crusher or other equipments. However, Railway may recommend to local electricity boards for giving the connections. The responsibility for getting sanction / approval ultimately lies with the tenderer. No delays on this account will be entertained for completion. The tenderer should plan and organize the work accordingly to maintain the schedule of completion.  
  
Broken ballast has to be brought and stacked near the sidings in demarcated zones for loading in hoppers. When the ballast kept in the demarcated zone has been sampled and accepted, no further collection of ballast in the zone shall be permitted until the whole of ballast is loaded and certified as such by Inspector in charge and verified by Assistant Engineer. Batches of ballast containing a minimum of 500 cum, shall be offered for sampling and approval.
- 1.5. **Loading:**
  - a) The loading will be done by Mechanical means. The tenderer will have to utilise mobile loaders as there will not be any arrangement from Railway side for moving/shunting hoppers while loading. The choice of equipment is left to the contractor but while tendering he shall submit a list of equipment which he proposes to deploy.
  - b) The tenderer shall arrange to stack the ballast in the yard in the specified zone to facilitate convenience of loading into ballast train. The stacking ground should be level

and certified by the SE/P. Way before stacking is started. The contractor shall arrange to load ballast into hoppers by mechanical/manual means from the measured stacks as permitted by the Engineer.

- c) The ballast stack should be uniform i.e. its toes, ridges, and slopes should be uniform. The height of stack should not be less than 1.0m.
- d) The contractor should make his own arrangements for loading ramps etc., if needed.
- e) The contractor should arrange for loading minimum 30 BKH hoppers per day i.e., approximate quantity of 1100 cum.
- f) Loading should be done into hoppers up to the loading line marked therein and leveled uniformly as directed by the engineer-in-charge.
- g) Loading during night hours is to be carried out under discretion of Engineer in charge

#### 1.6. Measurements:

- a) Measurement of ballast will be made as per the following method:

$$\frac{L1 + L2}{2} \times \frac{B1 + B2}{2} \times \frac{H1 + H2 + H3 + H4}{4}$$

= Gross volume of the stacks.

Where as I) L1 and L2 are the average length of bottom and top on both sides respectively.

- i) B1 and B2 are the average breadths of bottom and top on both sides respectively.
- ii) H1, H2, H3 & H4 are the heights on 4 sides.
- iii) Additional measurements may be taken if necessary as decided by the Engineer-in-charge.

- b) Method of measurements for stack and wagons are indicated in paras 4.1 & 4.2 of specifications.
- c) Payment shall be made for gross measurements either in stacks or in wagons without any deduction for shrinkage/voids.
- d) Size and gradation of ballast to satisfy the requirements as per paras 2.3.1 of specifications. In case of oversize ballast, payment will be made as per paras 2.3.2 of specifications. Ballast of undersize will be rejected as per para 2.3.3 of specifications (Annexure-A). The rejected ballast shall be removed from the Railway premises by the Contractor within the time specified by the Engineer. Failing such removal, after the expiry of the period specified, the Railway shall be at liberty to dispose the ballast at Risk and Cost of the Contractor and charge ground rent as per Railway rules for the period such stacks are allowed to remain in Railway land.
- e) The ballast should be loaded into the wagons only after obtaining permission from DEN/Sr. DEN.

#### 1.7. RATE:

- a) Unless otherwise specified the Rate includes:

- i) All lead, lift, freight charges etc., and all the charges for loading, unloading and collection etc., involved in supplying the materials duly loaded in hoppers and other types of open BG wagons.
- ii) All taxes, Seignorage, Royalties, duties etc., and these will be paid by the contractor to the respective authorities. No additional payment on account of increase in tax/GST as per the GCC,



Royalty, Duties etc., shall be entertained. Any increase in the rate of taxes will be borne by the contractor/supplier.

- iii) The rate tendered by the contractor shall be comprehensive and shall be inclusive of all the cost of tools and plants, loading arrangement and all expenses, which will be required to meet in working in the conditions detailed in this document.
- b) It must be distinctly understood that the accepted rate for ballast is for materials which conform in all respects and particularly of quality mentioned in the specifications and free from dirt.

**1.8. Payment of Royalty/Seigniorage charges:**

The rate quoted by the tenderer is inclusive of all the charges payable to the Govt., as per extant rules. Seigniorage charges payable to Govt., as fixed by the concerned State Govt., and as revised from time to time during the currency of the contract are to be paid by the contractor. No demand for revision of rate will be entertained on account of revision of Seigniorage charges by the State Govt.

**1.9. Seigniorage charges recoverable from bills:**

- a) Seigniorage charges for supply of Ballast/Crushed stone and other minerals as fixed by the State Government and payable to them as revised from time to time during the currency of contract will be recovered by Railway from the contractors "on account" and "final bills" and remitted to the state government. The rates quoted by the Tenderer shall be inclusive of these charges. Claims regarding revision of seigniorage charges and consequent enhancement of the accepted rate will not be entertained. However, no seigniorage charges / fee shall be recovered from the bills of the contractor, if the contractor produces such documentary evidence as applicable in respective area of State Government as follows:
  - i) In case of supplies in state of Andhra Pradesh/Telangana/Maharashtra the document to be relied upon shall be "Transit Passes", subject to authentication & verification by the concerned Mining and Geology Dept. authorities as detailed in CTE/SC railway's letter No.W/44/B/Vol.VI dated 3.11.08
  - ii) In case of supplies in Karnataka state area of Secunderabad &Guntakal divisions the document to be relied upon shall be "Redeisted Mineral dispatch permit" and for Maharashtra state area of Secunderabad division the document to be relied upon shall be "Transit Passes" & for Maharashtra state area of Nanded division the document to be relied upon shall be "Royalty Clearance certificate" subject to authentication & verification by the concerned Mining and Geology Dept authorities as detailed in CTE/SC railway's letter No. No.W/44/B/Vol.VI dated 19.01.09
- b) **Payment of Excise Duty:** Similar procedure will be followed towards payment of Excise Duty also, if leviable and payable.

**1.10. 48.10. Sales Tax/VAT/GST** as the case may be at the rates applicable from time to time payable to State Government / Central Government shall be recovered from the running bills and final bills and Security Deposit and remitted to Central Government.

**1.11. Daily Schedule of Loading:**

Normally rake of 25 to 30 BKH wagons/hoppers will be placed for loading. Wagons may not be placed in one lot if required. It may be split into two or three lots and placed depending upon the availability of hoppers and sidings. The Contractor has to make

necessary arrangements to load at various sidings depending on the availability of hoppers and siding. The contractor will have to load the rake of 30 BKH hoppers in the day light period within 10 hours after the rakes are placed in the siding, failing which detention charges at Rs.2,000/- per hour or part of an hour per rake or pro-rata for each wagon/hopper not loaded in the rake whichever is less will be charged from the contractor as demurrage. The powers to waive off demurrage in exceptional circumstances will rest with the competent authority of Railway. Permission for night loading will be given by the Engineer at his discretion.

The holidays during which no loading will be done by the contractor in the siding, should be listed, it will be the responsibility of the contractor to advise of the actual number of holidays to be availed to the Asst. Engineer concerned in which no loading will be done. The contractor will be responsible to make good the deficiency so occurred by making extra trips on other working days.

#### 1.12. Schedule of supply:

- 1.12.1. The quarter of supply schedule shall commence after three months of mobilization period from date of LOA (D). The ordered quantity shall be supplied as per schedule to be monitored over 3 months periods called Monitoring Period w.e.f the date of commencement of scheduled supplies as under:

Schedule No.	Schedule period		Quantity (CuM)
	From	To	
1 <sup>st</sup>	D	D+3 months	Mobilization period
2 <sup>nd</sup>	D+3 months	D+6 months	
3 <sup>rd</sup>	D+6 months	D+9 months	
4 <sup>th</sup>	D+9 months	D+12 months	
5 <sup>th</sup>	D+12 months	D+15 months	
6 <sup>th</sup>	D+15 months	D+18 months	
7 <sup>th</sup>	D+18 months	D+21 months	
8 <sup>th</sup>	D+21 months	D+24 months	
9 <sup>th</sup>	D+24 months	D+27 months	
10 <sup>th</sup>	D+27 months	D+30 months	
	Total Quantity		

There is no bar in making supplies in mobilization period i.e before start of the 1st schedule period and supplies made during this period, if any, shall be adjusted against any short fall in subsequent supply schedule.

- 1.12.2. There will be a review along with contractor after each monitoring period to assess shortfall of supplies, if any, and reason thereof and remedial measures to be adopted.
- 1.12.3. In case of failure on the part of the contractor to arrange supplies as per the schedule fixed above, save force majeure conditions and/or delays attributable to the railways, one opportunity shall be given to recoup the shortfall without, liquidated damage in the next monitoring schedule not afterwards. The quantity over and above the scheduled quantity in a monitoring period only shall qualify for recoupment of preceding monitoring period.
- 1.12.4. A sum of equivalent to two (2) percent of the cost of stone ballast for the quantity of

non - recouped shortfall of pervious monitoring schedule shall be levied as liquidated damage. The liquidated damage so recovered is for not adhering to the specified schedule of supply and shall not, in any way, be affected by additional quantity of ballast supply made subsequently in further monitoring schedule or full supply in overall time of completion or any other conditions of the contract.

- 1.12.5. In cases of recoupment of shortfall is permitted in the next monitoring period, the price adjustment due to increase in indices for the shortfall quantity, if applicable, shall be limited to the amount payable as per the indices applicable for the month falling in the mid of original supply schedule. However, in case the indices fall below at the time of actual supply then the lower indices shall be adopted for the price adjustment. The same rate shall be applicable for supply against the short fall during currency of the contract.
- 1.12.6. In cases of shortfall is due to the reasons attributable to the railways, the extension in delivery period shall be granted under clause 17-A of the Standard General Conditions of contract proportionately after each periodic review and the contractor may supply this quantity in this extended period.
- 1.12.7. In cases of quality of supplies in particular monitoring period is more than prescribe including the short fall quantity for just previous schedule, additional quantity shall be construed as recoupment of shortfall from beginning as far as determination of rate is concerned on account of change in price indices, if applicable.
- 1.12.8. In cases of cumulative supply till a particular monitoring period is more than prescribed quantity originally, the additional quantity may be adjusted against shortfall, if any, in future monitoring schedule (s) on first - come, first - served basis.
- 1.12.9. The quantity shown in the tender schedule is approximate and will be Operated in full or part at the discretion of the Engineer - in - charge.
- 1.12.10. Payment will be made based on the actual quantity executed/operated.
- 1.12.11. The contractor shall make his own arrangements for men, materials, tools, and consumables etc., required for the work at his own cost.
- 1.12.12. In the event of any accident at the work site and it is established during the departmental enquiry by the Railways that the accident occurred wholly or partly due to any act tantamounting to negligence on the part of the Contractor or his labour in not adhering to the instructions of the Engineer-in-charge. The Contractor shall himself be liable for damage and also legal prosecution if loss of life is involved.
- 1.12.13. Conservancy charges as applicable and as modified from time to time will be recovered from Contractor's running bills.

1.13. *As stipulated in the previous para, the supply per year is \_\_\_\_ CuM for first year, but in case the contractor is able to supply more, the railway at its discretion may take additional quantity.*

1.14. Development of site:

- a) The necessary tracks of adequate length shall be laid on stable formation by Railways over which the wagons will be placed to perform the contract.
- b) The successful Contractor will be required to develop the site by levelling the grounds making approach roads and drainage arrangements etc., at his own cost. No payment whatsoever shall be admissible on this account. Stacking is to be done in the areas earmarked by the Engineer duly catering the available space for other requirements of approach to goods shed. Rate quoted includes all lead and lift and no extra payment will be made. Required approach road and drainages arrangements etc. can be made by the contractor at his own cost. No payment, whatsoever shall be admissible on this account.
- c) After expiry of contract, the contractor shall vacate the area and hand over the land clear and free of encroachments or obstructions. The contractor will not be entitled for any

claims for earth work or any other temporary work done by him in connection with development of site vide para 10(b).

**1.15. Legal Matters:**

- a) The successful tenderer shall pay all legal charges in connection with the preparation, stamping and registration of the agreements and other incidental charges, if any.
- b) The Railway will not be bound by any power of Attorney granted by the contractor or any change in the composition of the firm made subsequent to the execution of the contract Agreement. The Power of Attorney and changes shall only be considered by the Railway Administration after obtaining proper legal advice.
- c) The contractor will at his own expenses obtain such permit or parawana for quarrying or for any other purposes as may be necessary to enable him to perform his part of the contract. The Railway will not under any circumstances be liable to obtain any permit or parawana whatsoever.

**1.16. General:**

- a) Till such time, the ballast is measured and taken over by Railway, its custody shall be responsibility of the contractor.
- b) The Railway will make arrangements to remove the loaded wagons and place empties for loading.
- c) The contractor will ensure free access to premises when ballast or stone is being quarried, to the Engineer-in-charge or his representative at all times.

**1.17. Payment:**

The payment shall be arranged by Senior Divisional Finance Manager/South Central Railway, Secunderabad through Divisional Engineer or Senior Divisional Engineer, South Central Railway, Secunderabad division based on the measurements and bills of quantities.

**2. SPECIFICATION FOR TRACK BALLAST IRS-GE-I June 2016**

- 2.1. **SCOPE:** These specifications will be applicable for stone ballast to be used for all types of sleepers on normal track, turnouts, tunnels and deck slabs etc. on all routes.

**2.2. DETAILED SPECIFICATIONS:**

**2.2.1. General:**

- a) **Basic Quality:** 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.
- b) **Particle Shape:** 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.
- c) **Mode of Manufacture:** Ballast for all BG main lines and running lines and running lines, except "E" routes but including "E " special routes, shall be machine crushed. For other BG lines and MG/NG routes planned/sanctioned for conversion, the ballast shall preferably

be cases with prior approval of Chief Track Engineer/CAO/C. such approval shall be obtained prior to invitation of tenders.  
On other MG and NG routes not planned / sanctioned for conversion hand broken ballast can be used for which no approval shall be required.

## 2.3. PHYSICAL PROPERTIES:

- 2.3.1. Ballast sample should satisfy the following physical properties in accordance with IS: 2386 Pt IV 1963 when tested as per the procedure given in Annexure I & II.

	BG, MG & NG (planned / sanctioned for conversion)	NG & MG (other those planned for conversion)
Aggregate Abrasion Value	30% Max*	35% Max
Aggregate Impact Value	20% Max*	30% Max

\* In exceptional cases, on technical and/or economic grounds relaxable upto 35% and 25% respectively by CTE in open line and CAO/C for construction projects. The relaxation in Abrasion and Impact values shall be given prior to invitation of tender and should be incorporated in the tender document.

- 2.3.2. To carry out Impact test on ballast, a test sample pieces (about 5Kg in weight) of size 10mm to 12.5mm will be required. Appropriate care should be taken by the railways that ballast selected for breaking down to 10mm to 12.5mm size for Impact test should be random from the ballast supply to avoid any subjectivity in selection of test sample. Alternatively, the test sample in the recommended range of size be got manufactured along with the ballast in sufficient quantity required for this test.
- 2.3.3. The "Water Absorption" tested as per IS: 2386 Pt. III - 1963 following the procedure given in Annexure III should not be more than 1%. This test however, to be prescribed at the discretion of CE/CTE in open line and CAO/Con for Construction Projects.
- 2.3.3.1. The power of relaxing for water absorption limit should be delegated to CTE in open line/CAO on Construction for specified areas. However, maximum water absorption in any case should not be allowed more than 2.5%

## 2.4. SIZE AND GRADATION:

- 2.4.1. Ballast should satisfy the following size and gradation:

- |                                      |            |
|--------------------------------------|------------|
| a) Retained on 65 mm mesh sieve      | 5% maximum |
| b) Retained on 40 mm sq. mesh sieve* | 40% to 60% |
| c) Retained on 20 mm sq. mesh sieve  | ***        |

\*\*\* Not less than 98% for machine crushed  
Not less than 95% for hand broken ballast.  
\* For Machine crushed ballast only.

- 2.4.1.1. In exceptional cases, where it is considered necessary on technical considerations, to reduce the maximum size of ballast for NG lines, CTE may modify the size & gradation of the ballast as defined above. In case of such modifications, provision

given in para 2.3.2 to 2.3.4 below shall also be suitably modified. This will be finalized before invitation of tenders and should be incorporated in the tender document.

#### 2.4.2. OVER SIZE BALLAST

- i) Retention on 65 mm square mesh sieve.  
A maximum of 5% ballast retained on 65 mm sieve shall be allowed without deduction in payment.  
In case of ballast retained on 65mm sieve exceeds 5% but does not exceed 10%, payment at 5% reduction in contracted rate shall be made for the full stack. Stacks having more than 10% retention of ballast on 65mm sieve shall be rejected.
- ii) In case ballast retained on 40mm Square mesh sieve (machine crushed case only) exceeds 60% limit prescribed in 2.3.1 (b) above, payment at the following reduced rates shall be made for the full stack in addition to the reduction worked out at ( i ) above.
  - 5% reduction in contracted rates if retention on 40 mm. square mesh sieve (for machine crushed ballast only) exceeds 60% limit prescribed in 2.3.1(b) above, payment at the following reduced rates shall be made for the full stack in addition to the reduction worked out at i ) above.
  - 10% reduction in contracted rates if retention on 40 mm. square mesh sieve is between 65% (excluding) and 70% (including).
- iii) In case retention on 40 mm square mesh sieve exceeds 70%, the stack shall be rejected.
- iv) In case of hand broken ballast supply, 40 mm sieve analysis may not be carried out. The executive may however ensure that the ballast is well graded between 65 mm and 20 mm size.

#### 2.4.3. UNDER SIZE BALLAST

The ballast shall be treated as undersize and shall be rejected if -

- i). Retention on 40 mm sq. mesh sieve is less than 40%
- ii). Retention on 20 mm square mesh sieve is less than 98% (For machine crushed) or 95% (for hand broken).

#### 2.4.4. SIEVE ANALYSIS OF BALLAST

- 2.4.4.1. The test sieve used for sieve analysis shall confirm to the specifications given in Annexure-IV
- 2.4.4.2. While carrying out sieve analysis, 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 but should not be pushed through the sieve.
- 2.4.4.3. The percentage passing through or retained on the sieve shall be determined by weight. The weighing equipment used shall NOT have least count more than 100grams.

### 3. CONDITIONS FOR SUBMISSION OF TENDER.

- 3.1. Each tenderer at the time of tendering shall submit the test report of Impact value.

Abrasion value, water absorption value from approved laboratories and the list of these laboratories shall be mentioned in the tender documents.

- 3.2. The tenderer shall also furnish an undertaking as incorporated in the tender document that the ballast supply at all times will conform to specifications for Track Ballast as specified by Railways.

Tenderers are required to submit the test report of Impact value, Abrasion value, Water absorption value in respect of sample of ballast proposed to be supplied, from any of the following testing laboratories. Ballast test certificate from other than the under mentioned laboratories shall not be accepted/considered.

S No	Laboratory
1	Osmania University; Tarnaka ; Hyderabad
2	JNT University, Kukatpally, Hyderabad
3	National Institute of Construction Management and Research, Gachibowli, Hyderabad
4	National Academy of Construction, Kondapur, Hyderabad
5	Vasavi College of Engineering, Gandipet, Hyderabad
6	Chaitanya Bharati Institute of Technology, Gandipet, Hyderabad
7	Deccan College of Engineering, Nampalli, Hyderabad
8	Gurunanak Dev College of Engineering, Bidar
9	National Institute of Technology, Warangal
10	Kakatiya Institute of Technology & Sciences, Warangal
11	Andhra Pradesh Research Laboratories, Rajendranagar, Hyderabad
12	Sri Venkateswara College of Engineering, S.V.University, Tirupati
13	Koneru Lakshmaiah University, Vaddeswaram, Guntur Dist.
14	Bapatla Engineering College, Bapatla
15	JNT University, Kakinada
16	JNT University, Anantapur
17	S.K.University College of Engineering, Anantapur
18	Sri Veera Saiva Engineering college, Bellary
19	Govt Engineering College, Raichur
20	G.Pullareddy College of Engineering, Kurnool
21	Srisailem Right Branch Canal's Central Laboratory, Nandyal
22	Rajiv Gandhi Memorial College of Engineering & Tech., Nandyal
23	RVR&JC College of Engineering, Chowdavaram, Guntur Dist
24	Sri Guru Gobind Singhji College of Engg & Technology, Nanded
25	Government college of Engineering, Osmanpura, Aurangabad
26	Geo Technical Laboratory, Rail Nilayam, Secunderabad.
27	V.R.Siddharrtha Engineering College, Kanuru, Vijayawada.
28	All the Railway laboratories of other Railways.

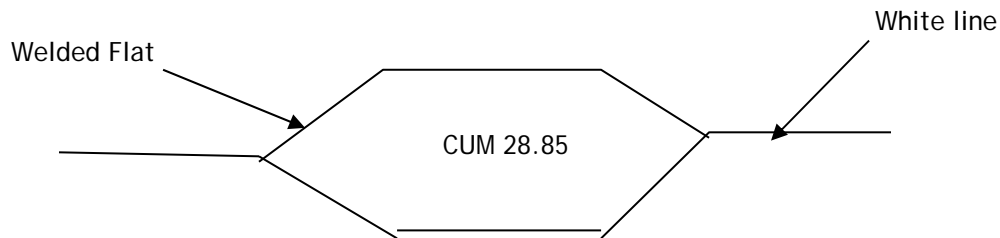
#### 4. METHOD OF MEASUREMENT:

##### 4.1. Stack Measurement:

Stacking shall be done on a neat, plain and firm ground with good drainage. The height of stack shall not be less than 1m except in hilly areas where it may be 0.5m. The height shall not be more than 2.0m. Top width of stack shall not be less than 1.0m. Top of stack shall be kept parallel to the ground plane. The side slopes of stack should not be flatter than 1.5:1 (Horizontal: Vertical). Cubical content of each stack shall normally be not less than 30 Cum in plain areas and 15 Cum in hilly areas.

##### 4.2. Wagon measurement:

- 4.2.1. In case of ballast supply taken by direct loading into wagons, a continuous white line should be painted inside the wagon to indicate the level to which ballast should be loaded. The cubical content in cubic meter corresponding to white line should also be painted on both sides outside the wagon.
- 4.2.2. In addition to painted line, mentioned in para 4.2.1, short pieces of flats (Cut pieces of tie bars or other wise) with cubical contents punched shall be welded at the center of all the four sides as permanent reference. In case, the supply is taken in general service wagons, actual measurements will be taken.



#### 4.3. Shrinkage allowance:

Payment shall be made for the gross measurements either in stacks or in wagons without any deduction for shrinkage/voids. However, when ballast supply is made in wagons, shrinkage upto 8% shall be permitted at destination while verifying the booked quantities by the consignee.

### 5. SAMPLING AND TESTING

#### 5.1. General

- 5.1.1. The samples shall be drawn with due diligence and adequate precaution so that they represent the true nature and condition of the ballast.
- 5.1.2. Being a heterogeneous material, the gradation of ballast loaded in wagons and / or dumped/inserted in the track 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 sample from wagons and track are not representative samples as far as gradation is concerned. Even in the same stack, the results of two checks may not be same.
- 5.1.3. 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..

#### 5.2. Sampling Frequency

In order to ensure supply of uniform quality of ballast, the following norms shall be followed in respect of sampling, testing and acceptance:

- 5.2.1. 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 specifications 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 conform to any of these specifications.

5.2.2. Subsequent tests shall be carried out as follows:

Type of Tests	Supply in Stacks	Supply in wagons
a) Size and Gradation Tests;	One for each 100CuM or part thereof in any stack	One for each 100CuM or part thereof for quantity to be loaded in wagons
b) Abrasion value, Impact Value and Water absorption value(*)	One test for every 2000CuM	

(\*) 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 specifications 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.

5.2.3. All tests for Abrasion value, Impact value and water absorption should be got done through approved laboratories or railways own laboratories ( list of these laboratories shall be mentioned in the tender document). These tests, subsequent to award of contract, shall be done at Railways Cost.

5.3. Supply of ballast in Stacks

5.3.1. Sampling Procedure

- (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 (150-200mm) should be collected from stack for every 100 CuM 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 in (ii) above, using JCB bucket or any other suitable Power Equipment, on a clean, flat and hard surface.

NOTE: In exceptional cases 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 0.027cum shall be drawn from each of the "Gross Sample", by the method described in para 5.3.1 (vi), for carryout Size & Gradation tests.

- (vi) Method for drawing "Test Sample": The ballast in "Gross Sample" shall be scooped into 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 cone with 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.
- (viii) In case of stacks of volume more than 100cum, more than "Test Samples" will be tested for size & Gradation. In such cases, the sieve analysis results of all the test "Test Samples" shall individually conform to following gradation, for acceptance/rejection of the whole stack:
  - (i) Retention on 20mm Sq.Mesh Sieve shall not be less than 98% for machine crushed ballast (not less than 95% for hard broken ballast)
  - (ii) Retention on 40mm Sq.Mesh Sieve shall be between 40 to 70%
  - (iii) Retention on 65mm Sq.Mesh Sieve shall not be more than 10%

The full payment / reduced payment for the whole stack, as given in Para 2.3, shall be decided based on the average of the sieve analysis results of the all the "Test Samples" for a stack.

#### **5.4. Supply of ballast in Heaps for loading directly in Wagons**

##### **5.4.1. Sampling Procedure**

Samples of ballast shall be collected from heaps of ballast proposed to be loaded into wagons. For this, the contractor shall inform ADEN in- charge in writing sufficiently in advance before placement of rake, 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.

- 5.4.2. Based on the approx.. quantity of ballast to be loaded in the rake, methodology for sampling of ballast to be followed shall be the same as in Para-5.3.1 and 5.3.2 above.

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 as per Fig-1.
- 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 50 mm, 40 mm, 25 mm and 1.70 mm.
- 1.4 Drying Oven

2. **Test Sample:**

- 2.1 The Test sample of 10,000 gm. shall consist of clean ballast conforming to the following grading.  
 Passing 50 mm and retained on 40 mm square mesh sieve : 5,000 gm@  
 Passing 40 mm and retained on 25 mm square mesh sieve. : 5,000 gm@  
 @ tolerance of  $\pm 2\%$  permitted.
- 2.2 The sample shall be dried in oven at 100-110° C to a constant weight and weighed (Weight 'A').

3. **Test Procedure**

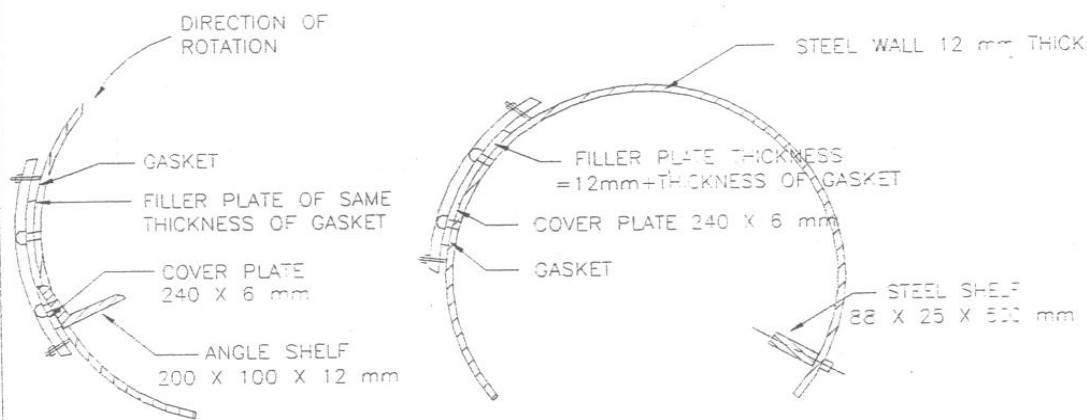
The test sample and the abrasive charge shall be placed in the Los Angels abrasion testing machine and the machine rotated at a speed of 20-33 revolutions/minute for 1000 revolutions. At the completion of test, the materials shall be discharged and sieved through 1.70 mm IS Sieve.

4. **Analysis and reporting of the Result:**

- 4.1 The material coarser than 1.70 mm IS sieve shall be washed, dried in oven at 100-110 degree 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;

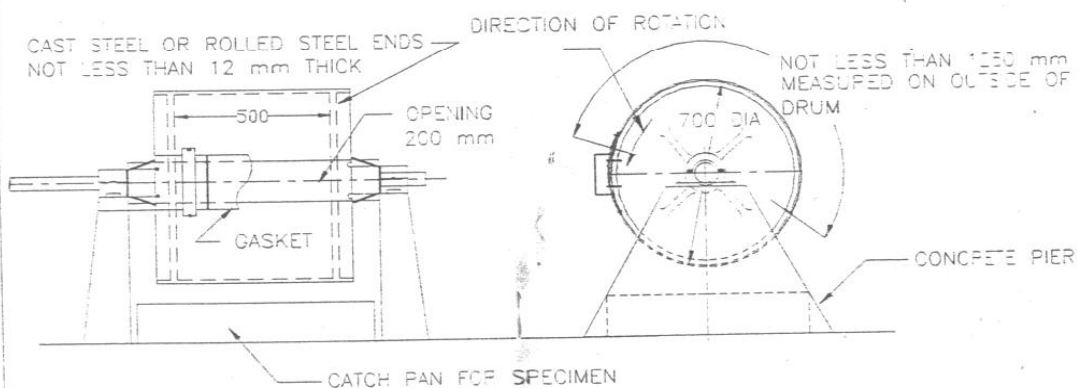
$$\text{Aggregate Abrasion Value} = \frac{A-B}{A} \times 100$$

FIG. 1



ALTERNATIVE DESIGN OF ANGLE SHELF

PREFERRED DESIGN OF PLATE SHELF AND COVER



ALL DIMENSIONS ARE IN MILLIMETRES.

NOTE 1 - SHAFT BEARING WILL BE MOUNTED ON CONCRETE PIERS OR OTHER RIGID SUPPORTS.

NOTE 2 - SUGGESTED HORSE POWER FOR MOTOR IS NOT LESS THAN ONE.

## LOS ANGELES ABRASION TESTING MACHINE

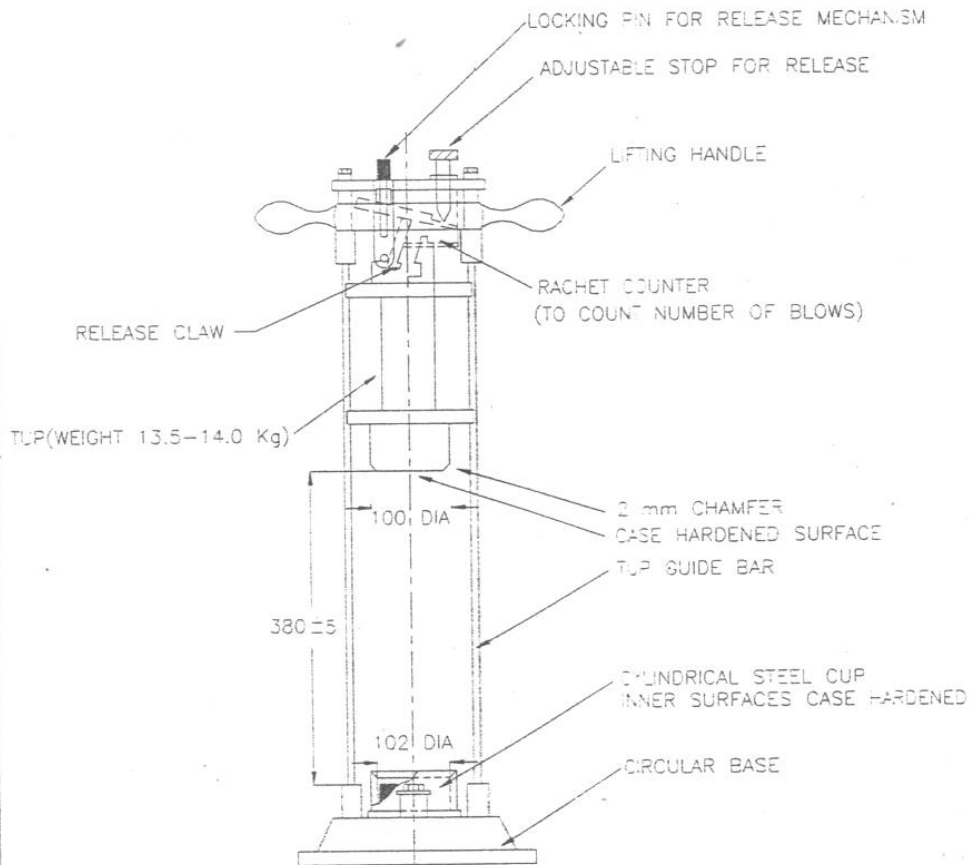
**AGGREGATE IMPACT VALUE**  
(Based on IS: 2386 Part IV - 1963)

1. **Apparatus:**  
the apparatus shall consist of the following.
  - a) Impact testing machine Conforming to IS 2386 Part IV - 1963 as per Fig. 2
  - b) IS Sieves of sizes 12.5 mm, 10 mm and 2.36 mm.
  - c) A Cylindrical metal measure of 75 mm dia and 50 mm depth.
  - d) A tamping rod 10 mm 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 12.5 mm IS Sieve	100%
Retention 10 mm IS Sieve	100%
  - 2.2 The Sample shall be oven dried for 4 hours at a temperature of 100 - 100 degree 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 'A').
3. **Test Procedure**
  - 3.1. The cup of impact testing machine shall be fixed firmly in the position on 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 380 mm above the upper surface of the aggregate in the cup and allowed to fall freely on to 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 2.36 mm 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 'A') 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.

$$\text{Aggregate Impact Value} = B/A \times 100$$
  - 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.

FIG. 2



ALL DIMENSIONS ARE IN MILLIMETRES.

# AGGREGATE IMPACT TEST MACHINE

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** 75x 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 Samples**

A Sample of not less than 2000 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 22-32 degree 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  $24 \pm \frac{1}{2}$  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 spread 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 100-110° degree C for 24 hours. It shall then be removed from oven, cooled and weighed (weight 'B')

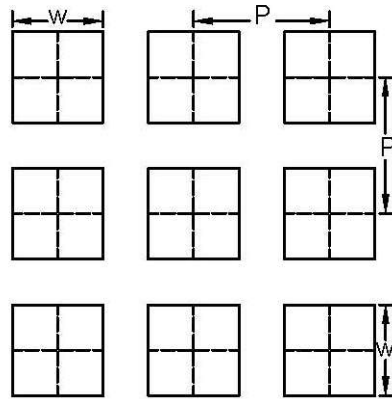
4. **Analysis and Reporting of the Result:**

Water Absorption =  $(A-B)/B \times 100$

Two such tests shall be made and individual and mean results shall be reported.

5. **Specification of Test sieves used for Sieve Analysis of Ballast**

1. The test sieves shall be perforated plate sieve type with square holes/apertures, mounted on a frame. The test sieves are designated by the nominal size of holes/apertures.
2. Material of perforated Plate: The perforated plate for test sieves shall be manufactured from Brass sheet or steel sheet or stain less steel Sheet o Electroplated Steel Sheet.
3. Plate Thickness: The thickness of plate used for making test sieve and the tolerance permitted for this shall be as following:  
  
For 65mm Square Mesh Sieve -3mm (Plus 1.0mm Minus 0.5mm)  
For 40mm Square Mesh Sieve -2mm (Plus Minus 0.5mm)  
For 20mm Square Mesh Sieve -2mm (Plus Minus 0.5mm)
4. Arrangement of Holes/Apertures: The square holes/apertures of size "W" in the perforated plate shall be arranged at pitch "P" as per the sketch given below:



6. Sieve Opening Size, Pitch of Openings and tolerances: The nominal size of individual hole/aperture at mid section (W), the Pitch of holes/ apertures (P) and permissible tolerance for them shall be as under:

Test Sieve of Square Mesh Size	W		P	
	Nominal Size	Tolerance	Distance	Tolerance
65mm	65mm	(±)1.5mm	80mm	(+) 12.0mm (-) 8.0mm
40mm	40mm	(±)1.5mm	50mm	(+) 7.5mm (-) 5.0mm
20mm	20mm	(±)1.0mm	25mm	(+) 4.0mm (-) 2.5mm

7. Sieve Frame: the frame of test sieves shall be manufactured from Hardwood or steel sheet or Brass sheet. The internal size of the frame (i.e clear size of perforated plate mounted on frame) shall not be less than 100cm in length, 70cm in breadth and 10cm in height on sides.
8. Marking on test sieves: A label shall be fixed to the frame of each sieve, legibly marked with following information:
  - (i). Nominal Aperture Size,
  - (ii). Material of perforated plate,
  - (iii). Material of sieve frame,
  - (iv). Markers Name or Trademark, and
  - (v). An Identification Number for the sieve.

#### G. SPECIAL CONDITIONS OF CONTRACT (MAINTENANCE OF TRACK )- TYPICAL FOR THE WORK - SAFETY RELATED TRACK WORKS

This contract is covered by Railways General terms and conditions of contract. In the event of any conflict or inconsistency between the General terms and Conditions of Contract and special terms and conditions of contract the latter will prevail.

1. Monthly claim and payment is to be done against this contract for each SSE/P.Way unit.
2. ADENs has to do minimum two times check (at least once in fortnight) regarding quality and quantity of work done, including minimum number of manpower actually provided for track attention per day.
3. Payment for track works executed on particular day will be made only after satisfactory output in terms of quality and quantity. Decision of the concerned SSE/P.Way in-charge will be final in this regard.
4. Manpower deployed against each SSE/P.Way unit, each location wise with nature of work entrusted to be communicated by SSE/P.Way in-charge of the section to ADEN of section and Engineering control latest by 09.00 am on daily basis. SSE/P.Way to maintain daily record of the manpower deployed in his section.
5. In-charge SSE/P.Way will provide a departmental staff with each group to act as mate to ensure



- proper attention of track.
6. Agency has to provide at least one mobile no. to his concerned site engineer for regular communication.
  7. Agency may be required to take up the work of track attention at one, two or more than two no. of locations as per requirement in a SSE/P.Way unit's jurisdiction. Agency has to provide transport arrangement at his own cost unless otherwise specified.
  8. Statutory requirements: All statutory observations viz PF, ESI, WCA, Bonus etc., to the staff deputed by the contractor should be taken care by the contractor and he will be responsible for the maintenance of necessary records in this connection, and also comply with all statutory requirements in force from time to time. The contractor shall have PF code number. Railways hold the rights to withhold the payment if all the necessary documents are not provided when demanded. The contractor should abide by all laws stipulated by the State Pollution Control Board.
  9. Payment is to be made into bank account by the agency against men engaged by him. A bank statement is to be enclosed for passing the bill by Railway Administration.
  10. Safety shoe, retro- reflective jacket, helmet and hand gloves are to be provided to men engaged for track works.
  11. Weekly rest to personnel engaged for the work will be applicable on day as decided by Engineer in-charge.
  12. Agency has to provide basic tools, plants & machineries for track work to all the men as per requirement such as spiking hammer, shovels, phowrahs, beaters, crowbars, ballast- forks or rakes, basket and rail tongue, hydraulic non infringing jacks of min 10T capacity 2 nos. minimum, mechanical jacks 10 tonne to 15 tonne capacity- 4 nos. minimum.
  13. Railway staff deputed at site to work as mate for the agency labour has to carry gauge level, detonators, one set of hand signal flags red and green, one whistle to ensure safety.
  14. Agency has to take specific approval in writing for holidays to be availed for particular number of days depending upon local requirement in case of festival, bandh etc., No payment will be made for the days permitted by Engineer in-charge in addition to scheduled rest. Decision of Engineer in-charge regarding no. of days for specific purpose will be final.
  15. Railway will not be at any point of time responsible for any accident/injury occurring to men engaged by agency for executing track maintenance work. The agency will be solely responsible. The agency shall be responsible for any claim arising out of the employment injury or otherwise in the course of employment under any statute.
  16. In addition to the above conditions, the provisions of Indian Contract Act, 1872 and Child labour (Prohibition & Regulation) Act, 1986 are applicable.
  17. Conservancy cess charges as applicable and GST will be payable by the contractor as per extant rules.
  18. The railway shall maintain a work diary which will give the details of all the works carried out at various work spots daily including detail of manpower available which also should be jointly certified by the contractors representatives and inspecting official of the Railway daily. The extracts of this diary will form part of the monthly bill for verification.
  19. Contractor should be liable to reimburse Railway administration all costs, damages and awards incurred by Railways due to the act of omission or commission by him or his staff.
  20. Onus of maintaining the register as per the contract labour ( Regulation & Abolition) act lies with the contractor.
  21. Track work is a strenuous work. Hence, the contractor shall engage physically fit men of age preferably 18 to 45 years only.
  22. The contractor shall be responsible for employment of its labour and be liable for observance of all statutory provision of Government. No claim for employment of labour so engaged by the contractor in Railway on whatsoever ground shall be entertained.
  23. The contractor shall keep in force policy/policies of insurance against all liabilities and recognized risk in respect of accident to person employed by contractor for purpose of carrying out the work under the contract. In respect of all staff engaged by him, the contractor shall be responsible against all claims under Work Men Compensation Act, Labour Contract Act etc.,
  24. The contractor should furnish complete details of the labour to be deployed with supervisor (s) giving the working timings.
  25. The contractor shall ensure due periodical medical check-up of each of its manpower deployed

- for carrying out the work and medical fitness certificate to this effect shall have to be submitted to the Railways for records.
26. Contractor should issue identity badges to all his labour being engaged to carry out the work, including the Supervisor. These identity badges should be so carried that Railway security can identify them. The identity cards should be worn by the contractors labour during their presence on Railway premises.
  27. The quality of work will be closely monitored and shall be inspected on regular basis by Railway Authority. The contractor will not employ any unethical practices to compromise the quality of work. Contractor or his men will not use any such means, which will affect the quality of work and may cause damage to Railway property due to such practice, for which contractor will be solely responsible. If any such incident takes place and the contractor is found responsible, Railways will reserve the right to terminate the contract immediately.
  28. Initial basic training to personnel deployed for track maintenance work will be provided by concerned SSE/P.Way in-charge for 03 days.
  29. Accommodations and Railway passes: No accommodations shall be given to any contractor(s) or staff/supervisors for the purpose of stay. Also, no Railway pass/PTO shall be given to them.
  30. The deficiencies observed if any in work executed shall be attended immediately. Items affecting safety shall be brought to the notice of the SSE/P.Way/SE/P.Way immediately. Level crossings, bridges etc., shall be attended as per programme given by SSE/P.Way or SE/P.Way.
  31. The payment shall be released based on the record maintained by SSE/P.Way or JE/P.Way at site for the number of men present and the quantum/quality of work done. For the number of men available at site and/or the quality of work done and/or the penalties to be imposed for poor work/less work or unsafe work or need for imposition of speed restrictions to trains due to improper work done at any point or time, the Railways decision is final and the contractor shall have no claim what so ever on the same.
  32. The Railway ensures the right to reduce the deployment of contractors men as and when Railway men are available or as and when the contractors men are not required at the discretion of the SSE/P.Way or JE/P.Way and the contractors shall have no claim what so ever in his regard. The rate of payment will be made in proportion to the number of personnel utilized against requirement provided in the schedule.
  33. DEN/Sr.DENs of the section has to do minimum one test check inspection in each ADEN section during their regular inspection in a month regarding quantity and quality of work. Check performed is to be recorded in MB while passing the bill.

CONTRACTOR

Sr.DEN/DEN