

NORTH EASTERN RAILWAY

CE'S P.WAY CIRCULAR NO.63 OF 1972.

BALLAST REQUIREMENT-RECOUPMENT AND INCREASING OF BALLAST CUSHION.

1.0 Para 634 of IRWW Manual lays down that for assessing ballast requirement for maintenance purpose screening of ballast to the full depth should be carried out over a rail length at every half or one kilometre and then the percentage of clean ballast available in the track worked out. This method enables the Permanent Way staff to determine the requirement of ballast for recoupment purposes only, but does not give the requirement for bringing the cushion to standard depth. To overcome this difficulty, separate procedures as laid down below should be followed in future for:

- (i) normal recoupment
- (ii) sections where cushioning/deep screening has been programmed.

2.0 Quantity required for normal recoupment:

2.1 This is the quantity of ballast required for bringing the existing ballast profile to the standard, irrespective of the cushion available below the sleeper. By training out this quantity the top profile of ballast section will come to the prescribed standard.

2.2 A representative section of 5 metre length should be selected in every 1/2 km. This should preferably be between 0-100m and between 500 to 600 in the year 1972, 100m to 200m and 600 to 700m in 1973 and so on so that in five years time a detail is available for the entire KM. This representative section will have more or less the same ballast deficiency as the average deficiency over the length of 1/2KM which this section represents.

2.3 The ballast in this representative stretch should be screened as follows:-

(i) Where the standard cushion has not been provided the ballast should be screened in accordance with the prescribed procedure for overhauling as per CE's P.Way Circular No.46 of 1965.

(ii) In stretches where standard cushion has been provided or deep screening has been done in last 12 years independently or with relaying and 1/3 screening is to be carried out during the annual overhauling, the screening should be done as prescribe in para 633(b) of IRWW Manual.

2.4 (i) After the screening has been done, without disturbing the cores under the sleepers, in the manner prescribed above, the screened ballast should be put back. The deficiency will now be evident. To make up the deficiency a measured quantity of ballast using a box of 25 x 20 x 20 cm., box of 01 cum. capacity should be taken from the adjoining portions of track and the ballast profile brought to the standard indicated in CE's Plan No. P/76/1971 (enclosed

(ii) The no. of boxes of ballast so found deficient in 5m length should be filled up in column no.6 of the proforma and against the relevant stretch in the proforma AE-4 kept with the gang. By adding two figures of deficiency (expressed in no. of boxes) in the two $\frac{1}{2}$ kms. the requirement of ballast will straight way be available in cum/km.

2.5 The procedure indicated in paras 2.1 to 2.4 should be followed every year for all sections not likely to be taken up for increase in cushion. This may be done in advance of the start of 'overhauling'/'through packing' work from 15th October in order to train out as much ballast as required immediately following the 'overhauling/through packing' of a section.

3.0 Quantity required for increasing ballast cushion- CR at the time of "deep screening".

3.1 This is the quantity of ballast required to bring the depth of cushion to the desired standard including the top profile of ballast section as an improvement work during deep screening.

3.2 The following detailed procedure should be adopted for determining the quantity of ballast for providing standard ballast cushion.

(i) Screen a length of 5 metres, every 500 metres. This spot should preferably be the same where the final rail level post will be fixed after cushioning has been completed.

(ii) Dig upto 25 cm depth for trunk routes, 20 cms for main line and 15 cms for branch lines below the bottom of sleepers in a length of 5 metres in the selected spot. The entire ballast with earth and dust excluding the just below the sleepers should be taken out.

(iii) Screen the quantity taken out from the track to separate ballast from earth. For this purpose used (screened to retain 1/2" size and over).

(iv) Measures the screened ballast in boxes of size 25 x 20 x 20 cm and record the quantity in number of boxes.

(v) Measure the screened earth in the same way.

(vi) Record the quantities (no. of boxes of 1/100 cum) so measured in the proforma attached after adding 25 units more for the ballast (item iv above) and 25 units for earth (item v above) to

make up for the ballast and earth under the sleepers (in 5 m) not screened).

(vii) Note the depth of clean and caked up cushion below the sleepers and record the same in the proforma attached.

(viii) Cut the cess opposite this 5 metre length to the required level (for proper cushion) so as to allow proper drainage.

(ix) Pull the screened ballast back into the track and pack up the sleepers. Make up deficiency in ballast created on account of screening by taking clear ballast from adjoining track.

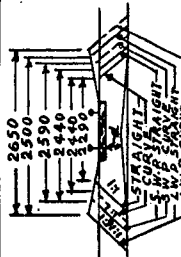
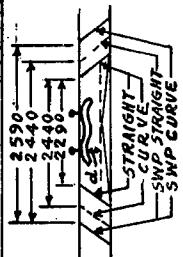
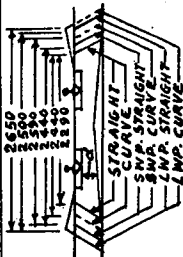
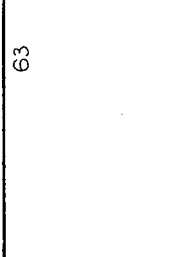
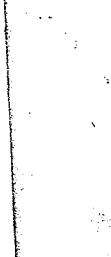
3.3 Once the proforma has been filled up, the quantity of ballast required kilometre-wise will be available based on which the total requirement on a particular section is to be worked out, both for recoument and for cushioning.

3.4 A copy of CE's sketch No. P/76/71 is enclosed indicating the standard quantity of ballast required per metre of track for different types of MG track structure. This should be made use of while filling in column no.5 of the attached proforma.

3.5 The requirement so worked out will form the basis for preparation of estimates for works of increasing ballast cushion.

3.6 This procedure will be followed once in advance of preparation of estimates, in case of sections programme for increase of ballast cushion or deep screening and/second time when actual work of cushioning is to be undertaken in specific lengths.

REQUIREMENT OF BALLAST FOR ONE METRE LENGTH OF TRACK FOR DIFFERENT TYPE OF SLEEPERS IN CUBIC METRES.

TYPE OF SLEEPER	FISH PLATED TRACK			SHORT WELDED TRACK			LONG WELDED TRACK	STANDARD BALLAST SECTION
	250	200	150	250	200	250		
CUSHION ON STRAIGHT TRACK	N+3 = .933 N+6 = .923	N+3 = .783 N+6 = .773	N+3 = .636	N+3 = .992 N+6 = .982	N+3 = .835 N+6 = .824	N+6 = 1.149		
WOODEN ON CURVED TRACK	N+3 = .968 N+6 = .958	N+3 = .812 N+6 = .802	N+3 = .661	N+3 = 1.022 N+6 = 1.0129	N+3 = .859 N+6 = .849	N+6 = 1.195		
STEEL TROUGH ON STRAIGHT TRACK	.88	.733	.591	.933	.779	X		
STEEL TROUGH ON CURVED TRACK	.912	.759	.612	.9616	.8017	X		
CST-9 ON STRAIGHT TRACK	.839	.6939	.552	.8905	.737	1.067		
CST-9 ON CURVED TRACK	.869	.7183	.572	.9166	.758	1.102		

3.7 Since the procedure outlined above also gives the quantity of ballast required for recoupment the procedure mentioned in para 2.0 need not be followed for these sections in that year.

3.8 When the above details are taken the quantity shown in columns 8,9 and 10 and 11 of the proforma should be entered in the proforma AE-4 kept with gangs under the column for requirement of ballast as under:-

A.....cum C.....cm
B.....cum D.....cm

'A' indicate quantity of ballast in cum per KM for recoupment, 'B' indicates the quantity in cum. required to bring the section to standard depth of cushion, 'C' indicates the depth of clear cushion in cm. and 'D' indicates the depth of caked up cushion in cm.

4.0 PWIs shall submit the requirement of ballast for recoupment to their DENs through their respective AENs by 28th of February every year deducting the quantity of ballast already unloaded in the section after the date on which the assessment was made.

5.0 For sections proposed or programmed to be taken for cushioning/screening, the PWI will submit details alongwith the filled up proforma to DEN through his AEN when called for and indicate the figure A,B,C & D in form AE-4 as mentioned in para 3.8, so that this is available with the gangs for the inspecting officials. When cushioning/screening is not programmed, the PWIs should show the requirement for recoupment on form AE-4 as per instructions in para 2.3(iv) .

6.0 All PWIs and APWIs shall also keep a note in their pocket book indicating kilometrewise requirement of ballast as worked out on the above basis. This will facilitate proper unloading of ballast at site according to the assessment already done.