



TRACK MACHINE DIGEST

रेलपथ मशीन पत्रिका



*Indian Railways Track Machine Training Centre
North Central Railway, Prayagraj, Uttar Pradesh*

(Special Edition on BCM)



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Editorial Board

			
Sh. J. C. Chaurasia Principal Chief Engineer, NCR	Sh. Gaurav Verma Chief Engineer, NCR	Sh. Sanjay Asthana Principal, IRTMTTC, NCR	Sh. Anku Adarsh Chief Instructor, IRTMTTC, NCR
Patron	Advisor	Editor	Associate Editor

Editor's Note

It is matter of immense pleasure for me to put latest Edison of Track machine digest in front of you. The technological advancements of the track maintenance with use of latest state of art Track machines have become indispensable in present era. Track machines play a crucial role in modern railways by ensuring the safety, efficiency, and longevity of the railway network. They address the challenges posed by increased traffic, heavier loads, and higher speeds, which have made manual track maintenance increasingly inadequate. Automated systems employing sensors and precise controllers can quickly and accurately detect track defects, wear, and misalignment. This allows for proactive maintenance and repair, minimizing human error and reducing the risk of derailments and accidents. To improve utilization of these machines, it is important to reduce their downtime and repair them in the shortest possible time. Fast and growing traffic demands trouble free operation of Track machines in block section. In recent past few failures had taken place on Ballast cleaning machines while working in block section which resulted in long detention of traffic. In one case driving clutch could not be disengaged causing skidding of wheels during clearance of block through loco. Root level staff was helpless to put remedial measures due to lack of knowledge and even above they could not make machine fit for pulling in time. Speedy clearance is extremely essential and need of time. With this perspective in mind, and as per direction of PCE, NCR and CE/TMC, NCR, this edition delves deeply into the profound influence of documentation tools on various aspects of emergency attention of BCM in case of emergency. All topics are concerned with working of Ballast Cleaning Machines. Latest JPO and general guidelines for BCM working in Points and Crossing as issued by PCE/NCR sir has also been included for guidance purpose. Within these pages, we may explore a collection of various methodology involved and putting insights of technical prospective. Special classes for trouble shootings through logic chart, SPS, latest microcontroller system/pic technology is already initiated for tampers and non-tampers separately in IRTMTTC. IRTMTTC has also created one "e-nidaan patal" (A trouble shooting platform) for smooth operation and quick trouble shooting on various machines which is in final stage of completion. I would like to put a famous quote of Dale Carnegie:

"Develop success from failures. Discouragement and failure are two of the surest stepping stones to success."

I will simply add that it is precisely the existence of our content contributors' works, in their own way manifestations of uncommon sense that makes this digest worthwhile. Finally, I wish that this Track machine digest will reach to the expectations of our readers. For the benefit of Track machine fraternity, readers are requested to contribute the useful and effective contents for future editions of Track Machine digest.

With regards


Sanjay Asthana,
Principal/IRTMTTC

General guidelines for working of BCMs for Deep screening of Point & Crossings

-Shri J.C. Chaurasia
PCE/North Central Railway

Reference: Letter No. No. 219-W/TMC/NCR/Safety dated 25.08.2025

There has been a recent incident of derailment of a passenger train after deep screening work by BCM. This incident has highlighted operational risks while working with BCMs, especially on Points & Crossings. To prevent recurrence of such incidents, in addition to already issued JPO (circulated vide letter no. 219-W/I/JPO/TP/NCR dt. 08.08.25), following **preventive guidelines are being issued for strict compliance:**

1. No sleeper or rail of adjoining main/loop line track or crossover shall be shifted or ballast bed to be disturbed for screening of turnout by BCM, which cannot be packed by MFI/Unimat in same block. Only that portion of turnout will be screened by BCM where sufficient space between tracks is available to accommodate the BCM trough for screening and adjoining track need not be required to be opened.
(अर्थात बीसीएम ब्लॉक में उन्ही स्लीपर की मैनुअल डीप स्क्रिनिंग करना है जिसकी मशीन पैकिंग उसी ब्लॉक में हो सके)
2. The turnout (in Cross-over) deep screening by BCM depends upon the track centre distance. The portions to be screened by BCM and that to be screened manually have to be clearly identified and demarcated well in advance. A table for general guidance is attached as annexure-X.
3. Manual Deep screening of sleepers, which cannot be packed by machine in same block of BCM working, should be done in separate traffic block only and packing of affected track in main line, loop line and crossover portion, all to be packed by Tamping machines in the same traffic block only. Ballast refilling and Kucha packing should be done by contractor/P.Way staff before tamping by machine. After tamping, final track parameter must be taken and recorded before clearing the traffic block.
4. First train should be passed over worksite in presence of JE/SSE(P.Way) and after passing of first train again track parameter should be checked and picking of slacks should be done as per requirement.
5. General layout showing portion of turnouts to be screened by BCM and manually have been attached as annexure-Y, Y-1, Z and Z-1 for crossovers and normal turnout respectively.
6. First two blocks of BCM blocks in Point & crossing area to be attended by concerned AXEN/TMC and ADEN/Open line to ensure proper procedure of working and sufficient skilled labor and contractor supervisor.

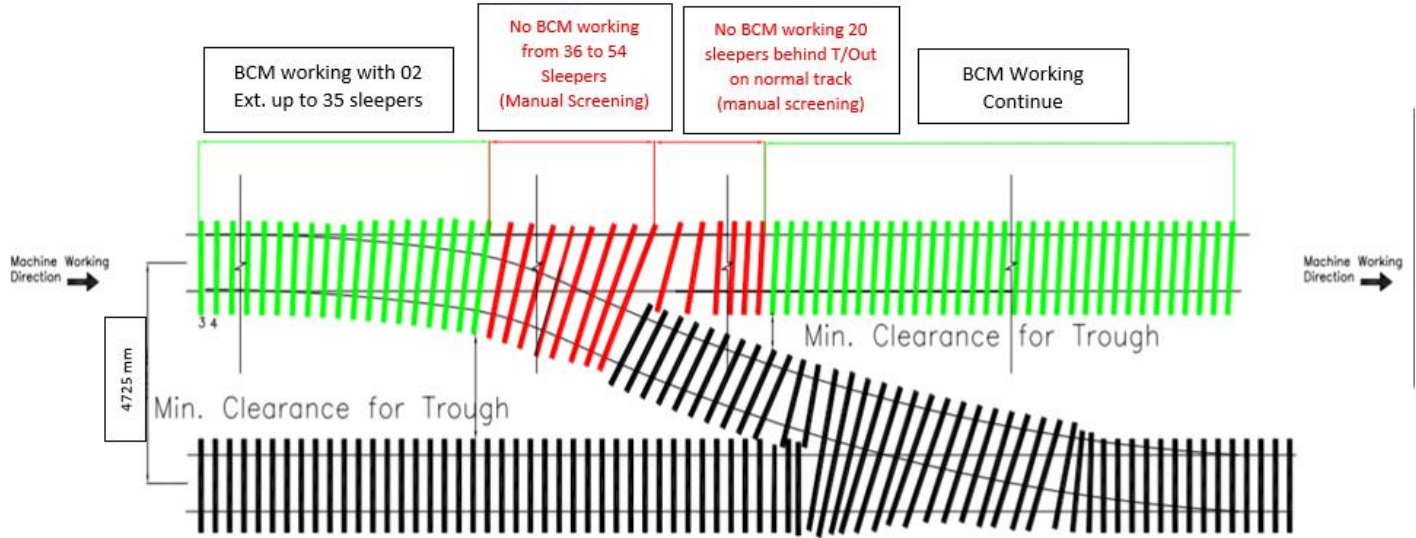
(i) For P&Cs in crossovers-

Type of X-Over	Total Nos. of Sleepers	Track Centre Distance (in mm)	Upto sleeper No. Deep Screening is possible without shifting of adjoining track
1 in 8.5	54	4725	Upto 35 with 2-Extension Pieces, beyond 35th sleeper manual Deep screening to be done.
		5300	Upto 42 with 3-Extension Pieces, beyond 42nd sleeper manual Deep screening to be done.
		6100 and more	Upto 54 with 5-Extension Pieces, beyond 54th sleeper manual Deep screening to be done.
1 in 12	83	4725	54 with 2-Extension Pieces, beyond 54th sleeper manual Deep screening to be done.
		5300	65 with 3-Extension Pieces, beyond 65th sleeper manual Deep screening to be done.
		6100 and more	83 with 5-Extension Pieces, (beyond 83rd sleepers manual Deep screening to be done in main line and also in X-over portion for initial 20 sleepers)

(ii) For normal T/O followed by Turn in curve : -

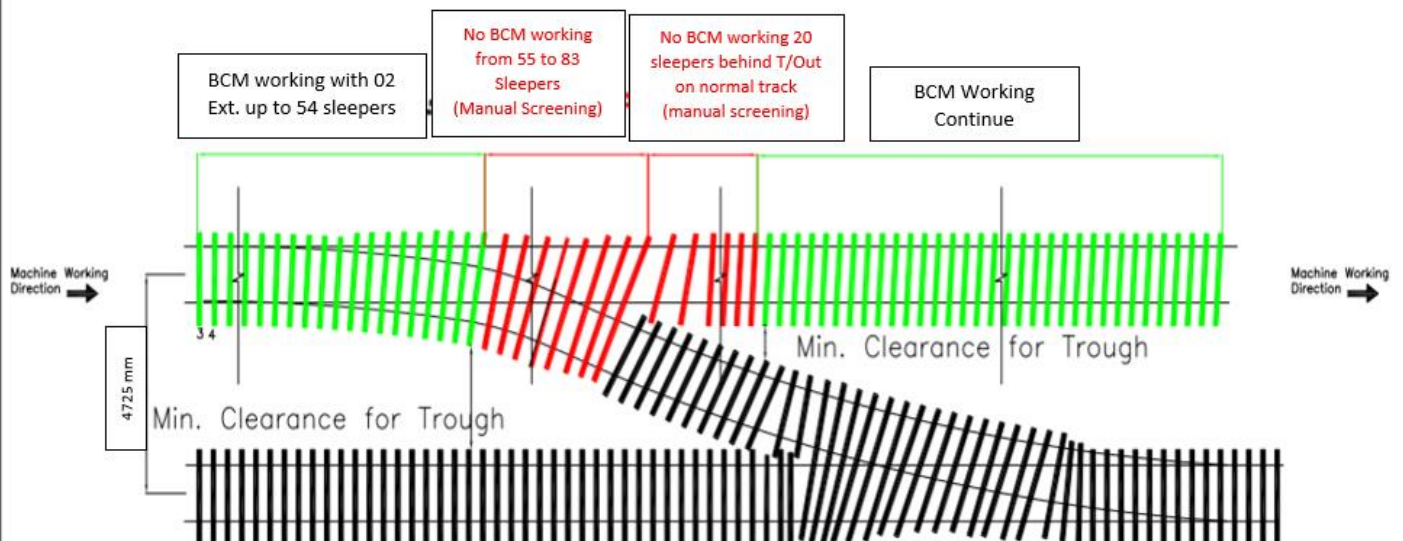
Type of T/O	Total Nos. of Sleepers	Track Centre Distance (in mm)	Up to sleeper No. without shifting of adjoining track screening is possible.
1 in 8.5	54 Nos.	4725 and more	1. up to 35 no. sleeper with two extensions. 2. From sleeper no. 36 to 54 with 05 extension. (Beyond 54 sleepers, 20 sleepers manual Deep screening to be done in main line and also in turn in curve portion for initial 20 sleepers)
1 in 12	83 Nos.	4725 and more	1. up to 54 no. sleeper with two extensions. 2. From sleeper no. 55 to 83 with 05 extension. Note: Beyond 83 sleepers, manual Deep screening to be done in main line and also in turn in curve portion for initial 20 sleepers

General Position of X-Over For Track Centre 4725MM



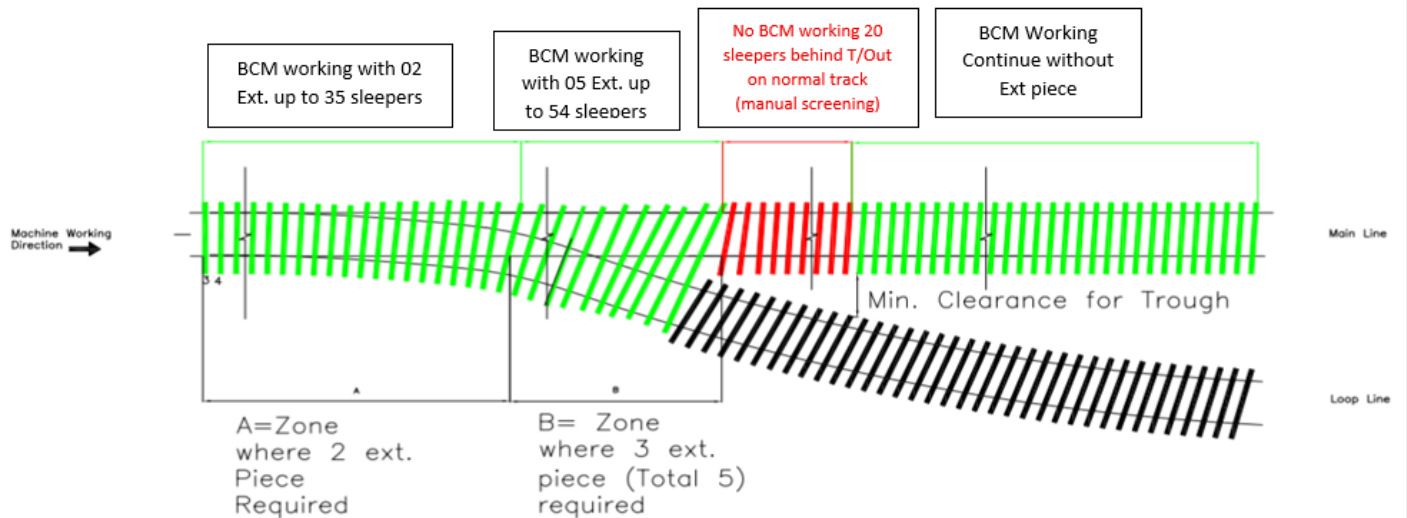
Note:—Not to Scale for General Guidance only

General Position of X-Over For Track Centre 4725MM



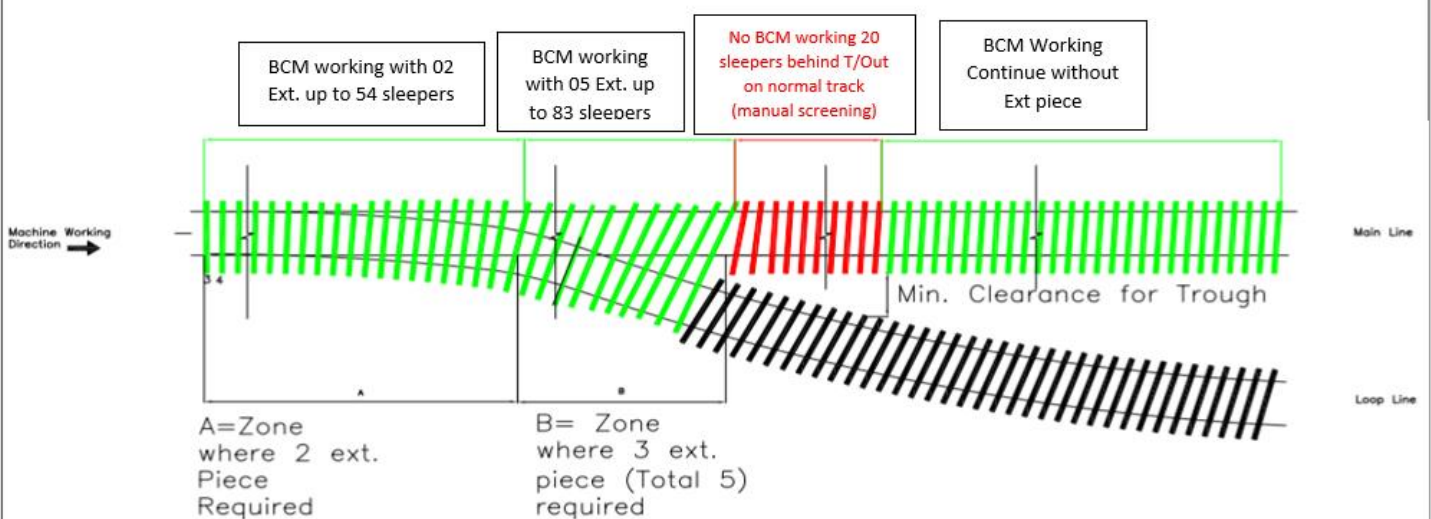
Note:—Not to Scale for General Guidance only

General Layout for deep screening of 1 in 8.5 Turn out with 2 / 5 Extension Piece



Note:—Not to Scale for General Guidance only

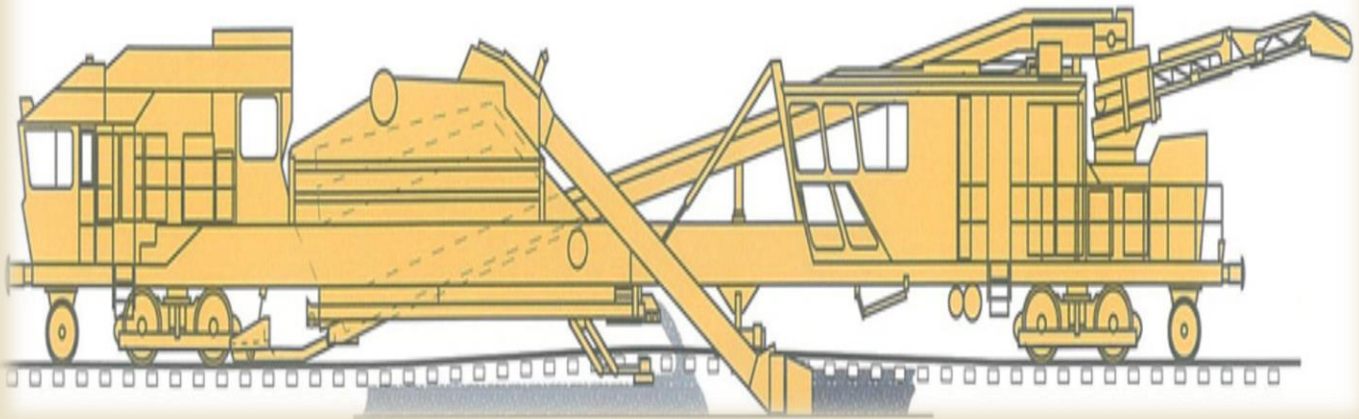
General Layout for deep screening of 1 in 12 Turn out with 2 / 5 Extension Piece



Note:—Not to Scale for General Guidance only

Need and role of mechanized deep screening in effective track maintenance

-Sanjay Asthana
Principal, IRTMTC



1.0 Abstract

Ballast is a key component of most Railway Tracks and fulfils crucial tasks. The strong forces induced by train operation, however, wear the stones, and in combination with external pollution the condition of the bedding gradually deteriorates. Track alignment issues arise as a consequence and these are usually corrected by use of tamping machines. The importance of a functioning ballast bed implicates the necessity for sophisticated condition monitoring. The tamping unit of a high-performance tamping machine has been equipped with multiple sensors, which measure various parameters during every tamping process. In all sectors of transportation, Railways are in a period of restructuring their management and technology. New methods of organization are introduced, commercial and tariff policies change radically, a more entrepreneurial spirit is required. At the same time, new high-speed tracks are being constructed and old tracks are renewed, high-comfort rolling stock vehicles are being introduced, logistics and combined transport are being developed. Awareness of environmental issues and the search for greater safety give a new role to the Railways within the transportation system. Meanwhile, methods of analysis have significantly evolved, principally due to computer applications and new ways of thinking and approaching old problems. Thus, it becomes necessary to come up with a new scientific approach to tackle management and engineering aspects of Track maintenance. For smooth movement of modern Railway rack and trains like Vande Bharat, ballast bed of our Track should have sufficient clean cushion. In the realm of rail transportation, maintaining a pristine and safe track system is critical for efficient and reliable service. Among the many operations involved in track upkeep, the cleaning of ballast—the coarse material acting as the track's foundation—plays a central role in ensuring longevity and stability. This article explores the need of ballast cleaning machine operation, the challenges encountered by Track machine organization and transformative impact on overall Track maintenance in new dimensions of increasing loads and speed over Indian Railways. A novel approach for addressing this need is presented here.



2.0 Consequences of contaminated ballast bed

Contamination of the ballast bed causes the following consequences:

- Pressure upon the formation rises.
- Pressure distribution angle becomes smaller,
- Friction between the ballast stones will be reduced,
- Elasticity of the track reduced and smooth travel of train becomes difficult.
- Durability of the track geometry - is reduced
- Excessive vibrations to passenger causing discomfort to passengers.

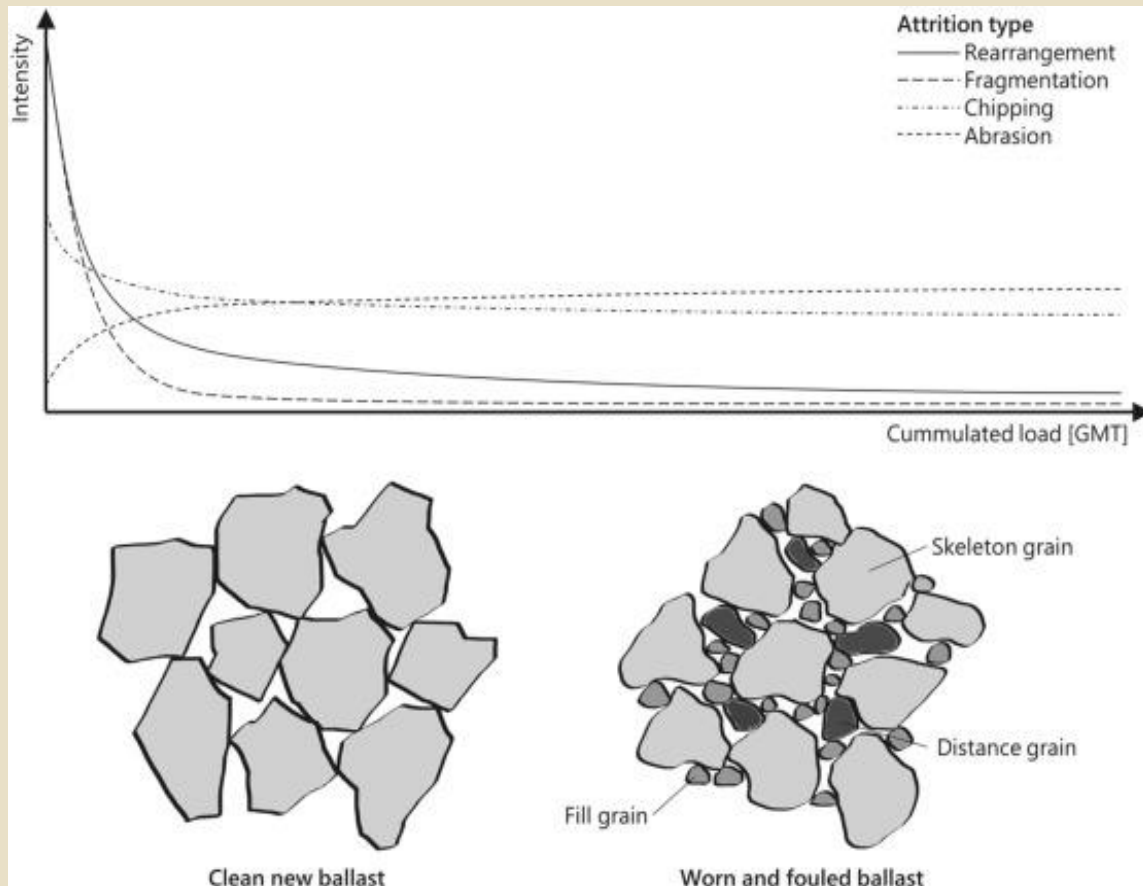
3.0 Track Formation

Recurrent track defects take place due to transverse inclination of the formation: approx. 4-5% (1:25-1:20) and differing thickness lead to the longitudinal direction creating different degrees of settlement. Sub grade deficiencies may be recognized by Recurrent track geometry defects, mud and splash areas caused by the rising of the sub grade materials into the track ballast, frost push-ups and frost heaves, lateral pushing-out of the sodden sub-soil, and deformities of the earth formation by ballast. formation must be produced with correct geometry in both the transverse and the longitudinal direction. The formation must extend level also in the longitudinal direction because ballast layers of different thickness underneath the sleepers also show differing settling behaviour caused by the operational load. Built-in irregularities lead to recurring track geometry defects in the longitudinal level. pockets and pits in which water collects.

4.0 Track ballast condition

Ballast in track consists of rough-edged interlocked crushed stones with a strictly defined grain size distribution and with an adequate vacant space between them. This structure guarantees the track ballast can fulfil its tasks, which are primarily securing the track grid in position and distributing the induced loads in longitudinal and lateral directions to mitigate pressure on the subsoil.

The constant load on track changes caused by train operation. In wear condition, stones lose their roughness and abrasion particles or chippings from the stones accumulate in the voids. Additionally, the bedding is exposed to external pollution. Fine materials can be blown in by the wind, dispersed by leaking freight wagons or can rise

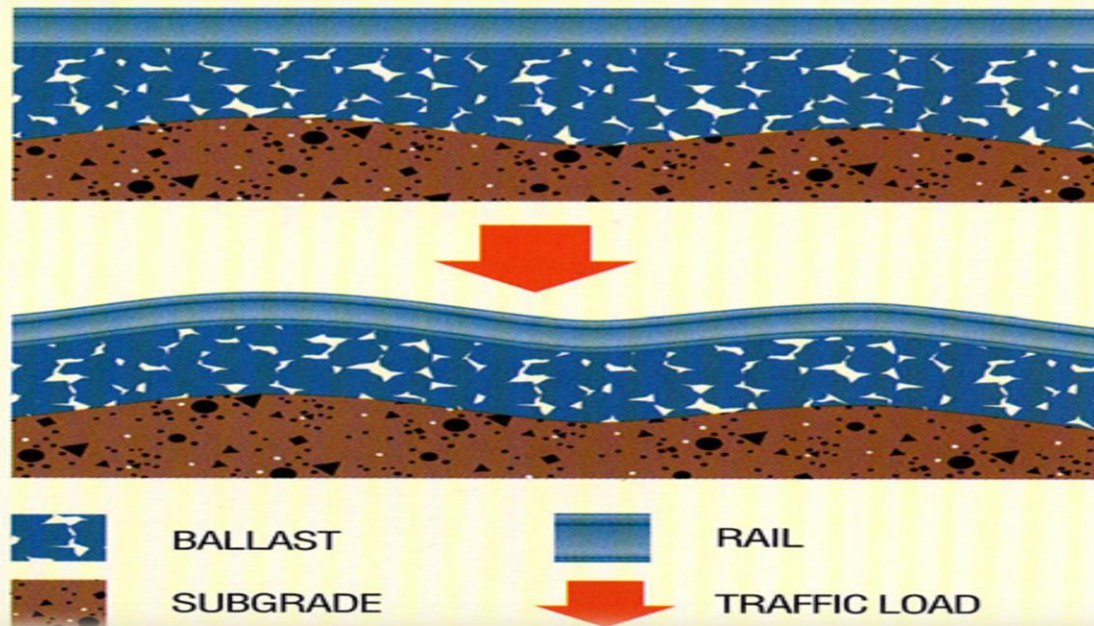


from organic subsoil. No matter the origin of the pollutant, a contaminated track bed with worn stones offers lower shear strength also. Load distribution within the superstructure changes and track alignment issues arise repeatedly. These track geometry irregularities, in turn, increase the dynamic forces induced by passing trains which worsens the problem and accelerates the deterioration of the track. Track geometry data is commonly used to estimate the condition of the bed, although the root cause of the problem remains unknown.

5.0 WHY BALLAST CLEANING IS NECESSARY

- The most important reasons are:
- To remove the worn and fouled ballast
- To provide effective drainage in track formation
- To prevent recurrent track defects
- Homogenous formation (transverse inclination = water drainage)
- Removing the fines from the ballast bed (fines= ballast<22,4)
- Reasonable ballast bed thickness= 25cm
- Conserving resources (new ballast)
- Uniform longitudinal level

In order to ensure drainage of the water infiltrating the ballast bed and avoid the creation of water pockets, an evenly cut formation is required, having a prescribed formation inclination of approx. 4-5% (1:25 to 1:20)



6.0 Role of Ballast Cleaning Machines

Ballast cleaning machines are indispensable for Railway maintenance, ensuring that the track remains stable and secure. Over time, the ballast layer, consisting of crushed stones, becomes contaminated with debris, soil, and excess water, reducing its effectiveness in maintaining track alignment. Ballast cleaning machines are engineered to remove these impurities by excavating the ballast, cleaning it thoroughly, and re-laying it beneath the track. This not only extends the lifespan of Railway tracks but also improves the safety and performance of trains. Cutting chain assembly is a crucial mechanism within these machines, designed to ensure the efficient cleaning and separation of ballast from unwanted debris. This assembly plays a vital role in maintaining the functionality and longevity of the equipment by effectively removing dirt, stones, and other contaminants. Its precision engineering allows for smooth operation, ensuring optimal performance in even the most demanding conditions.

The role of ballast cleaning machines in railway maintenance cannot be overstated, as they are essential to ensuring tracks remain clean, stable, and safe for train operations. At the heart of their efficiency lies the rake chain assembly, a crucial component that drives the machine's ability to remove debris and maintain optimal ballast conditions. Upgrading to modern, high-quality chain assemblies not only enhances the operational capabilities of these machines but also improves their durability, reducing the frequency of maintenance and downtime. Additionally, such upgrades contribute to long-term cost savings by minimizing replacement cycles and increasing efficiency, while also offering environmental benefits through reduced waste and energy consumption. To learn more about wholesale rake chain assembly options and our durable ballast cleaning machine chain solutions, visit our website and explore how our products can support your maintenance needs and operational goals.

The ballast bed distributes the loads of the trains uniformly onto the track substructure and assures a firm, unstinting position of the sleepers. To withstand these dynamic impacts the ballast bed has to be very elastic. The good function depends on the depth of the ballast bed, the size of the ballast stones and the degree of fouling.

The ballast bed is the load-bearing element of a railway track. Traffic loading subjects the ballast bed to static and dynamic stresses, causing ballast stone movement and wear that leads to fouling. Over the period this causes the ballast bed to significantly deviate from its original specifications and no longer adequately "fulfil" its load-bearing function, thus jeopardising track stability. It was recognised early on that, by cleaning the ballast, the load-bearing function of the ballast bed can be restored. Initially, ballast cleaning was carried out manually, but soon this arduous manual task was mechanised - the first machines built for this purpose appeared about one hundred years ago. In the 1920s, the first machines for cleaning ballast, known as "shoulder cleaners", appeared in the USA. The assumption underlying this technology was that a track would only need to be drained from the side. Drainage of the entire track was not necessary. Collecting the shoulder ballast and removing the fine particles that cause fouling was deemed adequate. Shoulder cleaning is still a recognised method of work. However, for a ballast bed with a high degree of fouling, this method only offers a short-term improvement.

6.1 Why Ballast cleaning is essential

A clean, elastic, and homogenous ballast bed is an absolute necessity for problem-free functioning of the wheel-on-rail system. This is gaining additional importance particularly on high-speed lines and other high-capacity sections of track. Using ballast bed cleaning machines, the ballast can be cleaned without dismantling the track. The central features are powerful scraper chains that excavate the fouled ballast and at the same time prepare the foundation for the new ballast. The ballast is cleaned in large oscillating screens with several screening levels which ensures optimum quality. The clean ballast is returned to the track directly behind the excavating chain. The residue from the cleaning is passed into a waste conveyor and transport system.



Fouling occurs under normal operational loads. This causes the edges of the ballast stones to break off, settlement of the stones and friction processes. Other causes of fouling are material rising up from the subsoil and external environmental influences. Overall, this causes an increase in the proportion of fines which reduces the elasticity of the track, the water permeability, and the durability of the track geometry. Consequently, there will be irregular settlement of the track which tamping can compensate only for short periods. From a certain point in time, it will be more economical to clean the entire ballast bed.

7.0 Ballast Cleaning Machines and Their Role in Global Infrastructure

BCMs are specialized equipment used to maintain the ballast bed under Railway Tracks. Ballast, typically made of crushed stone, serves as the foundation for rail tracks, providing stability, drainage, and support to the railway infrastructure. Over time, ballast can become contaminated with dirt, clay, and other materials, which can affect the track's performance and safety. Ballast cleaning machines remove the contaminated ballast, replace it with fresh material, and restore the track's integrity.

The market for ballast cleaning machines is expanding due to growing infrastructure needs, increased rail transport demand, and the need for sustainability in rail maintenance. These machines contribute to smoother rail operations, reduce maintenance costs, and enhance the overall longevity of rail systems.

Globally, the demand for efficient and effective rail infrastructure has surged, especially in countries focusing on green transportation and logistics. With a growing population and increasing demand for freight and passenger rail services, maintaining the quality of railway tracks has become a priority. Ballast cleaning machines have become indispensable in this scenario.

By ensuring the optimal condition of the ballast bed, these machines help rail operators reduce track maintenance costs and prevent accidents caused by track degradation. They also contribute to energy savings, environmental sustainability, and the overall efficiency of the railway system. Given these benefits, the ballast cleaning machine market is seen as a lucrative investment for businesses and government entities focusing on infrastructure development.

8.0 Factors Driving the Growth in need of deep screening

1. Increasing Railway Network Expansion

As global rail networks continue to expand, the need for high-performing ballast cleaning machines grows. Countries like China, India, and the United States are investing heavily in expanding their rail systems to enhance transport efficiency and meet the growing demand for freight and passenger services. This expansion drives the demand for ballast cleaning machines that can keep the tracks in top condition.

2. Technological Advancements in Machinery

The ballast cleaning machine market is also being driven by technological innovations. Manufacturers are constantly improving machine efficiency, automation, and energy consumption. Newer models come with advanced features, such as high-speed cleaning capabilities, integrated monitoring systems, and environmental-friendly designs that align with sustainability goals.

These innovations not only improve the operational performance of the machines but also make them more cost-effective and eco-friendlier leading to a broader adoption of ballast cleaning machines across regions.

3. Sustainability and Environmental Regulations

Environmental concerns and regulations are playing a significant role in driving the demand for ballast cleaning machines. These machines contribute to sustainability by reducing the environmental impact of rail construction and maintenance. They help

ensure that the ballast used is of the highest quality and reduces the need for excessive excavation and landfill use.

Ballast management

When it is considered that a single kilometre of a conventional double-track line has between 3000 and 5000 m³ of ballast (depending on type of permanent way and track spacing) the absolute necessity for economical handling and management of this valuable asset becomes obvious. Detailed knowledge of the quantities of ballast in the track (see EM-SAT ballast profile measuring) is the first step towards efficient ballast management. Some sections of a track lack ballast while others have a surplus. So, the goal is to recover the surplus ballast and add it where it is needed.

The combination of this task with the ballast profiling and distribution work is available. The great advantage of this incorporation compared to the previous method of loading, transportation, distribution, recovering and returning the excess ballast is the saving of time, personnel, and equipment, thus achieving a much higher cost efficiency.

9.0 Requirement of Deep screening over Indian Railways

As per data extracted from TMS as on 13.06.2025 total overdue track on main line for deep screening is 11792 Km which is nearly 11% of total main line Track over Indian Railways (104371 Km). Nearly same length of loop line i.e. 11009 Km is also due for deep screening. Similarly in case of turn out approximately 2944 T/o are due for deep screening over Indian Railways. As per new guidelines nearly 12% Track on main line, 8% T/o on main line and 5% loop line track becomes, due for deep screening every year. Total 177 BCM machines are working in Indian Railways which are capable to screen nearly 9000 Km track every year. Hence backlog for deep screening of plain track, turnout and loop line will be continuously in increasing manifold and will accumulate continuously in overdue state. This aspect can be overcome by longer block, double shift or by induction of nearly 20% more machines to meet out the growing need.

10.0 Some High-capacity ballast cleaning machines

In order to minimize track occupancy times on major worksites, it is necessary to use high-capacity ballast cleaning machines. This trend started with the RM 800, successfully proven in operation for numerous years, and was then followed by other machines of the RM 800 series and the machines of the RM 900 series achieving cleaning outputs ranging from 800 to 1,000 m³/h. These machines are capable of keeping up with the performances of track renewal trains, thus accomplishing major worksites in shorter track possession times.

As a further improvement machines were developed capable of taking ballast from MFS material conveyor and hopper units and distributing the ballast in the cleaned track under the machine.

RM 800 Super 3S

The RM 800 Super 3S is a high-capacity ballast cleaning machine with increased output due to the use of three vibrating screen boxes of 1500 m³/hr. The undercutting system has a cardan type cutter bar which enables infinitely variable adjustment of the cutting width.

Ballast cleaning and track relaying machine

The complete renewal of a section of track requires both the cleaning of the ballast bed and the exchange of the skeleton track. According to UIC recommendations this must be performed exactly in the following order: in the first working operation the track ballast is cleaned using a ballast cleaning machine and then the skeleton track is exchanged using a track renewal machine.

Since these two operations can practically never be performed in the same track possession, the track has to be made ready for traffic again after the ballast cleaning using tamping machines or an MDZ mechanized maintenance train to ensure unhindered passage of trains between the two phases of construction. Track renewal is later performed in a second track possession, after which the MDZ will also have to produce the correct final track geometry.

The commercial costs associated with renewal work on this scale are correspondingly high. In addition to the costs for planning, machines and staff, worksite security, etc., there are the respective operational hindrance costs for two complete track possessions to be considered. Nevertheless, this is a generally accepted technology today which has been in use around the world for many years – not least for lack of realistic alternatives.

The combination of ballast cleaning and track renewal in one machine has been under discussion for some time. Certainly, the railway administrations want such a technology because the associated savings potential would be enormous. RU 800 S – the machine to revolutionize line renewal. RU 800 S, a continuous action ballast bed cleaning and track renewal train. This machine combines the two working operations of ballast bed cleaning and track renewal in one single machine. This makes it possible to perform the renewal of sections of track in only one-track possession, with all the associated technological, logistic and above all economic advantages.

11.0 Conclusion

Railway ballast has many important functions to fulfil in the rail-sleeper-ballast bed system. An increase in the amount of fines as a result of foreign matter, or induced through wear, hampers its functionality. Track geometry assessments may be carried out to evaluate the effectiveness of ballast bed cleaning. Durability of the track geometry restored by tamping continues to decrease over the service life of a stretch. Ballast cleaning screens out fines, restoring the desired grain distribution in the ballast bed. This makes it possible to improve the track geometry in the long term once again.

These positive effects are not only important for ride comfort and the safety of the line, but also provide clearly provable economic advantages. The right time is a decisive factor here. The track geometry's development often provides initial information about the need for ballast cleaning.

The continuous development and improvement of track maintenance machines has led to a range of designs for all applications that not only fulfil the high demands of accuracy for high-speed Railways but also provide cost-effective solutions, either by increasing the working speed or by implementing technologies that save precious raw material. New high technology machines contribute to the sustainability of the investments in high-capacity passenger lines as they provide a high level of

maintenance. Ballast cleaning machines are crucial for maintaining the integrity and safety of railway tracks by removing fouled ballast and restoring proper drainage and track stability. They ensure uniform load distribution, improve track elasticity, and prevent track geometry issues. Without regular cleaning, contaminated ballast can lead to increased maintenance costs, speed restrictions, and reduced track lifespan. The ballast bed fulfils important functions as the binding element between sleepers and substructure. Fouling increases over the years for various reasons. When the necessary good functioning is no longer assured, ballast bed cleaning must be performed.

An Insight into latest Ballast Cleaning Machines operational in foreign railways

S. No.	Model No.	Brief description	Photograph
1	URM 700-2	Complete turnout service	
2	RM 900 HD-100	Machine with supply of new ballast and high self-propelled speed	
3	RM 2002	Compact machine with 2 screening units	
4	RMW 1500	Machine with 2 excavating chains and 3 screening units	
5	HOBBS 5	High Output Ballast Cleaning System in Great Britain	
6	RM 74 S	Machine for low axle loads	
7	RM 802	High performance ballast cleaning system for tracks in North America	
8	ZRM 350	Cleaning machine with placement of ballast in layers and a supply of new ballast	

Modification in Existing BCMs (RM-80 92 U) for deep screening of Platform lines

-Rohit Keshewani
Chief Instructor

1.0 Introduction:

In Indian railways BCM-RM 80 and RM80-92U is used for Deep screening of plain track, curved track and point & crossing which is very important to maintain proper drainage, clean cushion, and elasticity of track by deep screening. But due to dimensional restriction (space limitation) on platform lines these machines are unable to attend deep screening directly. To carry out deep screening of platform lines by using these BCMs with cutter bar of 1900mm length, pre-slewing of track is required about 400 mm. Pre slewing may be achieved by using track machine or manual slewing after getting traffic block. After deep screening of platform line re-slewing is also required to get back track in their original state. Post-slewing of track about 400 mm would be time consuming, requires at least 2 cycle using track machine such as UNIMAT/MFI. To reduce time of pre -slewing, post slewing and complications during working, some modification has been made with existing BCMs to achieve 100% mechanized track maintenance by deep screening of platform lines by machines. This article is based on actual modifications done on BCM-339 of SCR (BZA Div) and BCM-323 of NCR (PRYJ Div), which have been modified dimensionally by reducing width and design of chain guide (ascending and descending trough) connecting elbow and cutting chain with smaller cutter bar (1900 mm) with minimum slew about 100mm. So that deep screening can be done on Platform line with minimum pre-slew and post slew without disturbing adjacent track. Post slew done simultaneously with tamping machine working in rear.

2.0 Working Principle and Capability of Ballast Cleaning Machines

The excavating chain, having pentagon shape, cuts the ballast bed and carries the ballast and muck through the chain-guides to the screening unit. The vibrating screen with linear vibration effects separation of ballast from over/undersized ballast particles (muck). Underneath the vibrating screen, the muck falls on a main conveyor belt, which carries it to as slewable waste conveyor belt (which can be folded during travel), disposing the muck outside the track. Clean ballast is led to the distributor conveyor belts, from where it is distributed over the entire ballast profile.

(1) **Existing Excavation width** - The excavation should ideally cover full ballast width to screen the entire cross section of ballast for proper drainage as shows Fig 1:

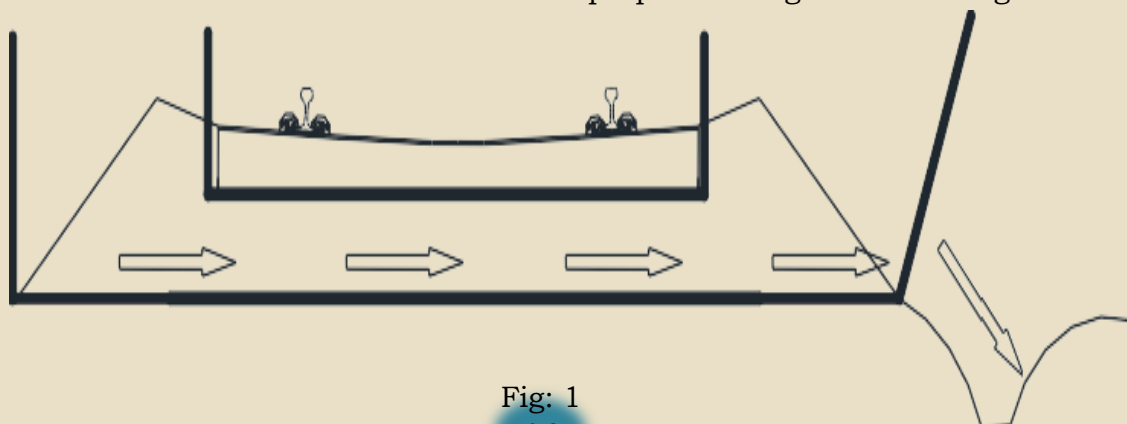


Fig: 1
14

Total width of excavation depends on size of cutter bar used. Two sizes of detachable cutter bar are 1900 mm and 2150 mm achieving cutting width of 4030 mm and 4280 mm respectively as shown in Fig: 2

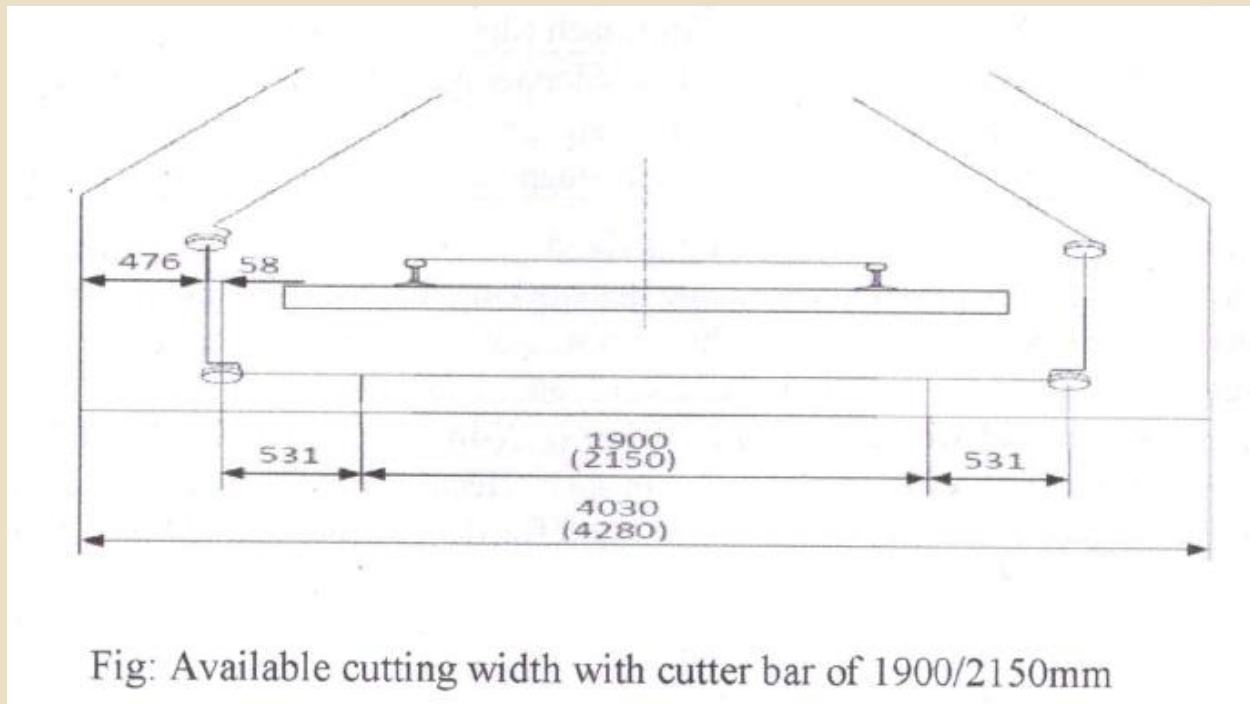


Fig.2 **EXISTING MODEL**

The desirable width of ballast bed at the formation level can be calculated by standard ballast profile for LWR. Since cutter bar cannot excavate full width of desirable ballast bed, pulling the ballast, a day or two prior to screening, from the toe towards the center, and heaping it on the sleepers and ballast crib area is necessary.

Normally with this excavation width arrangement at least 5000 mm space is required for proper linking and delinking of cutting chain at work site. Due to restricted space for chain trough to negotiate on platform lines, it is unable to carryout deep screening at platform lines.

3.0 Modified BCM with dimension:

Following modification is done by OEM M/s PLASSER INDIA Pvt. Limited in design and dimension as tabulated form:

SN.	Item Description	Parts No.	Required Qty.
1	Chain tensioning cylinder	RM.64.08.4000.04PIND.SP1676	01
2	Descending chain guide with rubber and wear plate	RM.64.08.1000.207PIND.SP1676	01
3	Aescending chain guide with rubber and wear plate	RM.64.08.1000.200PIND. SP1676	01

4	Wall guard	RM.64.08.1000.127PIND.SP1676	01
5	Cutting chain (89 link)	RM.64.08.2000.33/89GLIEDER-IN.PIND.SP1676	01set
6	Cutter bar	RM.08B.25.2150.01.PIND.SP1676	01
7	Connecting elbow for descending side	RM.08.27.0100.PIND.SP1676	01
8	Connecting elbow for ascending side	RM.08.27.0150.PIND.SP1676	01
9	Corner roller	RM.64.08.5000.23.PIND.SP1676	01
10	Dredger drum assembly	RM.61.04.519.PIND.SP1676	01

4.0 Comparative differences between spare parts after modification with image and dimension :

1.



Existing



Modified



Existing



Modified



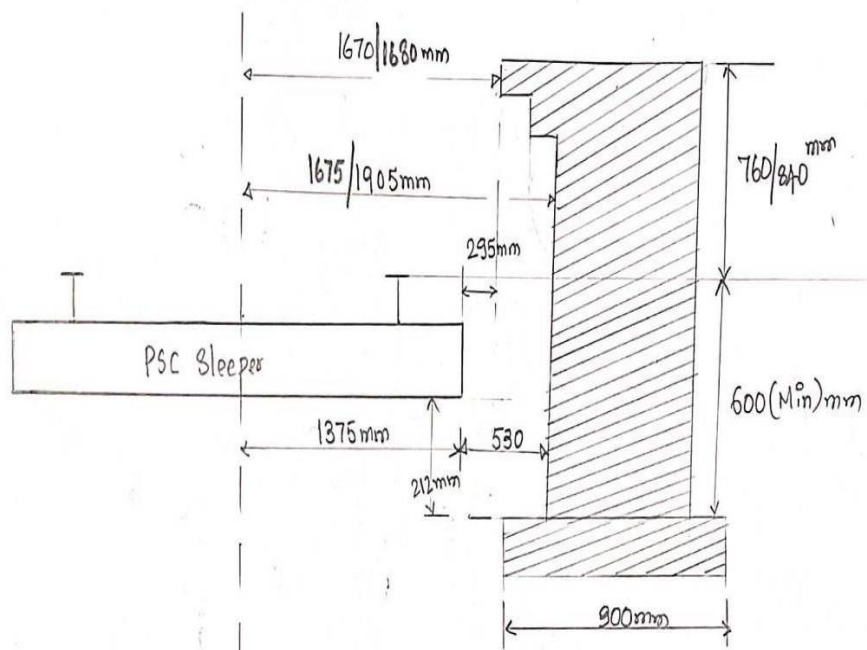
For High Level Platform deep screening with BCM

1. As per SOD minimum distance between passenger platform coping to center of track- 1670 mm
2. PSC Sleeper Length - 2750mm

3. Space available from sleeper end to passenger platform coping is = $1670 - 2750/2 = 295 \text{ mm}$



High Level platform.



S.No	Items	Existing Model with 1900mm Cutter bar	Modified Model 1900mm Cutter bar
1	Width of excavation	4030mm	3675mm
2	Ascending side trough width	534mm	379mm
3	Descending side trough width	534 mm	374mm
4	Slew required for deep screening of high-level platform including 20 mm clearance, based on trough width	$534-295$ $=239+20$ $=259 \text{ mm}$	<u>For Ascending side,</u> $379-295=84 \text{ mm,}$ $84+20=104\text{mm.}$ <u>For Descending side,</u> $374-295=79 \text{ mm,}$ $79+20=99\text{mm.}$

5.0 Conclusion :

By using modified spares with modified dimension total excavation width comes to 3675mm with cutter bar length having 1900mm. With this arrangement Pre slewing and post slewing reduces approximate 100mm.It would be easier to deep screening at platform line with this modification.



Recent Modifications in IRTMTC Campus



Open air Tea-spot for Trainees



New compactors in Library



60 New computers in computer Lab



Solar Panels installed in Hostels



New Football ground



Tricolour strip lights on street masts

Glimpses of recent events at IRTMTC



Independence Day celebration
at IRTMTC



Cricket match between
trainees



Inspection visit of Hon'ble
GM/NCR Sir



GM/NCR Sir discussing various
simulators at IRTMTC



Principal IRTMTC demonstrating
ZF gearbox to GM/NCR Sir



Cultural events by trainees on the
occasion of 41st Foundation Day

Glimpses of recent events at IRTMTC



Inauguration of Archive & Photo Gallery by the-then PCE/NCR



Inspection of 04 new classrooms by the-then PCE/NCR



Inspection of mess extension work by the-then PCE/NCR



Inauguration of giant Chess board for trainees by the-then PCE/NCR



Inauguration of Computer based evaluation system by the-then PCE/NCR



Inauguration of tea spot for trainees by the-then PCE/NCR

Glimpses of recent events at IRTMTC



International Yoga day celebration



International Yoga Day Seminar session on importance of Yoga



Seminar on World Environment Day 2025



Plantation Drive at IRTMTC

25

PRAYAGRAJ

Akhand Bharat Sandesh

GM NC Rly inspects Railway Track Machine Training Centre

Prayagraj: On his arrival at the premises, the General Manager was welcomed by Chief Engineer, Track Machine, North Central Railway, Shri Gaurav Verma. After the welcome, he highlighted the importance of training center in modern track maintenance along with the map of IRTMTC. Along with this, he also highlighted the training capacity here and appreciated the General Manager for the increasing demand for training on the arrival of new machines in future. The General Manager also inspected the simulator of modern tamping machine present in this institute, which is equipped with



equipment present in various laboratories present in the institute. During the inspection of the laboratories, in the technical discussion, the General Manager understood the challenges of the track machine.

son heritage and legacy parts of Indian Railway track machines kept there were appreciated by the General Manager. The General Manager and the officials accompanying him also inspected the auditorium under construction at the Training Centre and took several important decisions in the presence of the General Manager to ensure the availability of state-of-the-art infrastructure in it. Indian Railways is rapidly moving towards full-mechanized maintenance of railway tracks by track machines to ensure the gift of high speed to passengers, rapidly. In IRTMTC, various supervisors, trainees of Indian Railway track machines, trainees of other railway PSUs as well as foreign railways are also trained. In such a situation this training center has emerged as a heritage of Indian Railways with training experience of more than 40 years, whose importance is going to prove many times more in the coming times as compared to the past. The General Manager was accompanied by Chief Engineer Shri SC Jain, Chief Electrical Engineer, Chief Signal Engineer, Senior Deputy General Manager and other officials of North Central Railway.

IRTMTC in News



IRTMTC In News

Joint procedure order for deep screening of point & crossing by BCM

-North Central Railway

Reference: JPO Letter No. 219-W/1/JPO/TP/NCR dated 07.08.2025

Following JPO is issued by North Central Railway for deep screening of Point & Crossing by BCM machines in NCR:

1.0 Introduction: -

1.1 Point & Crossing is an important portion of track which requires systematic maintenance for safe running of trains. Over a period, due to traffic, the ballast cushion in these points and crossings become caked up warranting deep screening to restore the elasticity & drainage of the track and to avoid detention of trains due to failure of engineering /S&T gears. Deep screening of turnout by BCM is a multi-departmental task (Engineering, S&T, TRD and Operating) to be executed safely with detailed joint planning.

1.2 On IR, 1 in 8.5, 1 in 12 & 1 in 16 Turnout are used, with 1 in 12 type of turnouts being predominant on main line

1.3 BCM machine has following width of cutter bar and cutting width:

Type of BCM	Width of cutter bar	Total cutting width available with elbow pieces (without extension pieces)	Extension
Old Type BCM machines	1900 mm	4030 mm	Extension by maximum 7 pieces are possible with each extension of 500mm, on Right Hand Side only (with respect of working direction of BCM)
New Type of BCM Machines	2150 mm	4280 mm	

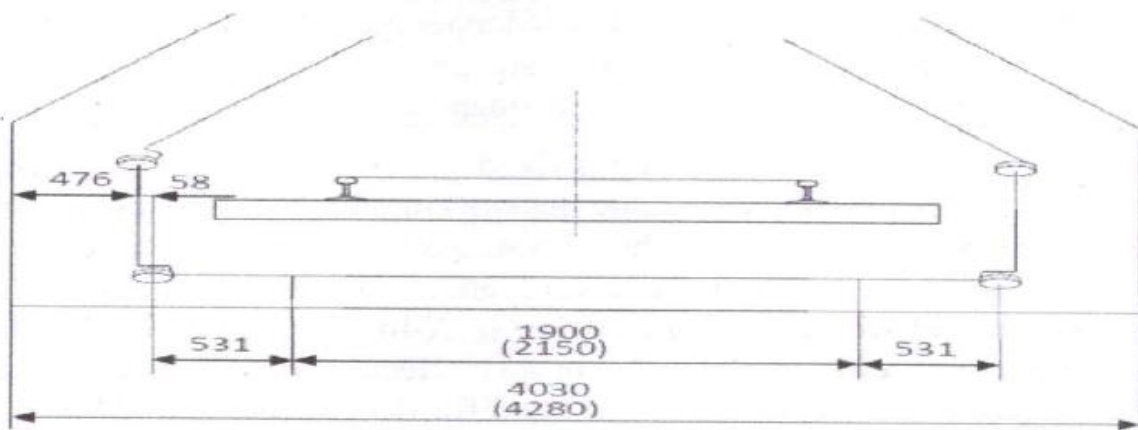


Fig: Available cutting width with cutter bar of 1900/2150mm

1.4 Turnout sleepers have varying dimensions with summary as under:

Turnout type	Type and no. of sleepers	Length of important sleepers
1 in 12	Approach sleepers: 5 nos Turnout Sleepers: 1-83 Exit sleepers: 4+4	Sleeper no. 3 & 4 = 3750 mm Other sleepers no 1-16, except 3 & 4 = 2750mm Sleeper no 54 = 3710 mm Sleeper no 55 = 3750 mm Sleeper no 83 = 4900 mm Exit sleepers = 2550 mm
1 in 8.5	Approach sleepers: 5 nos Turnout Sleepers: 1-54 Exit sleepers: 4+4	Sleeper no. 3 & 4 = 3750 mm Other sleepers no 1-10, except 3 & 4 = 2750mm Sleeper no 35 = 3720 mm Sleeper no 36 = 3780 mm Sleeper no 54 = 4900 mm Exit sleepers = 2550 mm
1 in 16	Approach sleepers: 5 nos Turnout Sleepers: 1-101 Exit sleepers: 4+4	Sleeper no. 2 & 3 = 3750 mm Other sleepers no 1-17, except 2 & 3 = 2750mm Sleeper no 64 = 3745 mm Sleeper no 65 = 3780 mm Sleeper no 101 = 5100 mm Exit sleepers = 2550 mm

1.5 Length of turnout sleepers increases gradually on turnout side. Extension pieces are attached to tackle the increased length of turnout sleepers. Drawings are placed as **Annexure-A** and summary is as under:

T/O type	Extension pieces	Turnout sleepers that can be tackled
1 in 12	2 Nos	Approach + Sleeper no. 1 to 54
	2+3 Nos (Total 5 nos)	From Sleeper no. 55 to 83 3 Exit sleepers on line on which m/c is moving 2 Exit sleepers on other line (on which m/c is not moving)
1 in 8.5	2 Nos	Approach + Sleeper no. 1 to 35
	2+3 Nos (Total 5 nos)	From Sleeper no. 36 to 54 3 Exit sleepers on line on which m/c is moving 2 Exit sleepers on other line (on which m/c is not moving)
1 in 16	2 Nos	Approach + Sleeper no. 1 to 64
	2+3 Nos (Total 5 nos)	From Sleeper no. 65 to 101 3 Exit sleepers on line on which m/c is moving 2 Exit sleepers on other line (on which m/c is not moving)

1.6 Working direction of BCM machine is fixed. It can be changed on turn-table or triangle, but it is not practically possible to change the working direction frequently. Moreover, extension pieces can be extended only on right hand side of working direction of BCM. Hence, working direction of BCM cannot be changed in yard and based upon the available working direction of BCM, direction of working (SRJ to Xing or Xing to SRJ) is fixed and working line (main line or turnout) is selected. Thus, by proper selection of working line, the above limitation can be overcome and BCM can be utilized for deep screening of both (M/L and T/O line) lines.

1.7 Special note regarding deep screening of specific sleepers

It is very vital that some sleepers at special locations cannot be deep screened by BCM. For homogeneous ballast bed and uniform running, such sleepers should not be left without deep screening. Such sleepers are to be invariably deep screened by special means as under: -

1.7.1 Point motor sleepers:

- a) Sleeper nos 3 & 4 for 1 in 8.5 & 1 in 12 T/Os and sleeper nos. 2 & 3 for 1 in 16 T/O are of longer length for fixing S&T motor. Extra length of these sleepers is extended on LH or RH side of turnout and may/may not be laid in favorable direction. If extension of point motor sleepers are on RH side w.r.t. working direction of BCM, then these sleepers are in favorable direction and it is possible to deep screen them by BCM without any need of removing the point motor sleepers (however, point motor disconnection will be required).
- b) If extension of point motor sleepers are on Left Hand side of working direction of BCM, then these sleepers are in unfavorable direction and it is not possible to deep screen them by BCM. In such case, if feasible, direction is to be corrected in a prior advance joint block with S&T, so that for future deep screening such problem does not arise. If correction of direction is not feasible due to site/space constraint, these sleepers are to be removed during same traffic block of BCM and reinserted after BCM working. If done in same block, it will require additional time. Typical situations are explained in **Annexure-B**.

1.7.2 Exit Sleepers/Sleepers behind exit sleepers:

Due to obstruction by infringing sleepers of other line (turnout side/main line as the case may be), deep screening with 5 extension pieces can be done maximum upto exit sleepers for 1 in 12 & 1 in 8.5 T/O and upto sleeper no. 101 for 1 in 16 T/O. As per site conditions, few infringing exit and normal sleepers may be required to be temporarily shifted to carry out the deep screening of entire turnout. Behind turnout (Back of Xing side), due to sleepers obstructing the trough of BCM, deep screening of one rail length is not possible with 5 extension pieces. Main line sleepers behind Back of Xing can be deep screened by either of following methods: -

- a) Attaching 2 more extension pieces (total 7 extension pieces). However, Traffic block and BCM are costly resources and working with 7 extension pieces, that too for only few sleepers, may not be a universally efficient solution.

OR

- b) Manually deep screening of infringing Main Line sleepers.

Judgment is to be made by field officers with regard to most effective option as per site conditions, availability of traffic blocks, progress etc. Deep screening of Turnout side sleepers may be done manually in separate block and as far as possible only machine packing to be done.

1.7.3 Cross-Over: In case of cross-overs, due to infringing sleepers of X-over portion & main lines, there is not sufficient space (depending upon track centre) to accommodate the trough of BCM and due to this space constraint, all the sleepers (turnouts as well as cross over portion) cannot be deep screened by BCM. At infringing sleeper location, deep screening shall be done manually for homogeneous bed and uniform riding quality. **Annexure-C** may be referred in this regard.

Note (For item no 1.7.2 and 1.7.3)-

- i. Sr DEN of the section should decide, point wise, which method is to be used for deep screening. Sr DEN should also ensure availability of required manpower (min 35-40 workmen) at site for manual deep screening of infringing sleepers. Proper initial manual packing and thereafter machine packing of the same shall be ensured by site supervisor before clearing the block.
- ii. Invariably, the competent supervisor should be available at site to ensure proper packing after manual deep screening before clearance of block. He needs to ensure minimum required labour before taking block.

1.8 Based upon traffic block available, the turnout can be deep screened in one block or two separate blocks. When two separate blocks are obtained, care should be taken to deep screen the complete switch portion in one block (either first or second block, depending upon working direction of machine from SRJ to Xing or Xing to SRJ) only.

1.9 The depth of cutting by BCM is around 300mm. If overall cushion (clean + caked up) is less than 300mm, then BCM will cut the existing formation and to avoid such condition, suitable lifting of turnout is required to be done by UNIMAT in advance (if possible as site condition allowed).

1.10 Engineering Department will give monthly calendar of proposed activity sufficiently in advance along with necessary funds for arranging sufficient manpower & signalling gears etc, wherever required.

2.0 Pre block activities:

2.1 Joint inspection, assessment of work and finalization of scheme of work:

Detailed Joint survey of all the points and crossings of the station/yard and preparation of joint assessment report at least 7 days in advance by the inspectors in-charge of Engineering (P/Way), S&T, TRD, Electric(G) & TI/Supervisor SS to assess:-

- i. The activities involved including any additional/typical site-specific activities. In case, any special assistance from higher authorities is required, same may be identified.
- ii. Engineering Department will conduct cushion survey and implantation measurement of existing OHE masts/portals in the affected track length. Existing rail level and rail level after completion of work with final tamping and relaxation of speed to full sectional speed will be worked out by engineering department to assess the requirement of lifting, lowering, and slewing of track and conveyed to TRD Department for assessing the- need of OHE adjustment and deployment of tower wagon at appropriate stage, if any. It may be noted that work of deep screening of turnout will be followed by temping by MPT/UNIMAT & DGS for consolidation of track before clearing the traffic block. Speed will be gradually raised from 20kmph -> 45kmph ->75kmph ->Full sectional speed in about 10 days period (details in para 4.1) and accordingly deployment of tower wagon, wherever required, will be planned by TRD Department along with engineering block, before raising the speed to 75kmph/full sectional speed. It may be noted that lifting of rod operated point is very difficult and cumbersome activity and hence to be avoided.
- iii. Selection of working line (main line/loop line) is to be decided based upon working direction of BCM and turnout layout (RH/LH).
- iv. Point sleepers may be inspected and if are in unfavorable direction, scheme to correct the sleepers and point motor on favorable side may be worked out.

- v. To assess any infringement to BCM Working due to S&T location box, Axle counters and other S&T installations/gears, signal mast, OHE mast, foundation etc.
- vi. To the extent possible, hidden obstacles like rail pieces, sleeper pieces, old S&T foundations, old drain, S&T cables (live/dead), electrical general cables (live/dead) etc. may be identified cable locator may be utilized for locating the cables. Upcoming GPR based technologies may be deployed to identify the other hidden obstructions like rails, pipes, sleepers, foundations etc.
- vii. Assess the resource planning of manpower, machine, T&P
- viii. Assess the requirement of artisan staff during block including engineering & S&T blacksmith.
- ix. It may be ascertained while BCM working, muck disposal etc will infringe the adjacent line or not. If yes, traffic block of adjacent line may be required.
- x. If tractor trolleys are required for simultaneous disposal of muck, same may be ascertained during joint inspection.
- xi. It may be decided whether work will be done in one block or two blocks. Detailed requirement of traffic block may be assessed. Typical requirement of traffic block is given in **Annexure-D/1-2**. However, actual requirement of traffic block may vary depending upon site specific complexities. Traffic block duration, tentative block timings, regulation of trains including single line working etc. may be decided based upon joint inspection. Assessment is to be made whether due to S&T disconnection of turnout/X-over, signalled movement on adjoining lines will be affected and movement of trains on paper authority will be required.

2.2 **Pre-Block activities by Engineering department**

- i. Wherever required, lifting is to be carried out by UNIMAT in advance by obtaining separate traffic block, so as to achieve minimum cushion (clean + caked up) of 300mm.
- ii. If changing direction of point motor is required and feasible, same may be preferably carried out in a joint operation with S&T department in a separate and advance block, While S&T department will provide competent supervisory staff, required Gr 'D' staff by S&T department are to be provided by Engineering Department.
- iii. Identified hidden obstructions like rail, sleepers, drains, CC foundations etc. are to be removed in advance.
- iv. Polarity bond, L-bonds, structure bonds, cross bonds required to be disconnected and reconnected during BCM/Unimat block are to be identified in advance. Alteration to electrical track bonding, if required, is to be done by Engineering department in terms of para 664(2)(b) of IPRWM-2024.
- v. Before disconnecting structure bonds, necessary temporary connection by rail jumpers/8 SWG GI wire is to be made from the nearest track/mast/earth pit. When the OHE is alive, no structure bond should be disconnected without arranging temporary earthing. The work of disconnecting/reconnecting structure bond is to be done under supervision of Electrical supervisor/staff.
- vi. Rail jumpers/wires required for arranging temporary connection as well as wires/bonds/insulation sleeves to be used for post BCM/Unimat work are to be arranged well in advance.
- vii. Engineering department shall provide required funds to S & T department for procurement of cable route cum depth locator (Two per division) to measure the cable depth without digging. This will reduce requirement of labour in future.
- viii. Arrange, required quantity of ballast nearby turnout to facilitate quick ballasting and tamping of switch portion, lead portion & crossing portion.
- ix. Arrange adequate labour with crowbar, beaters, Jim crow, wooden block, hydraulic/mechanical jack to lift the point zone in case of sinking and requiring major correction of X-levels.
- x. Arrange CC breaker, Gas cutter, ropes etc, to break and remove any obstruction like old concrete pedestal/rail peg/sleepers found during the block.

- xi. Arrange JCB/Tractor trolleys if required.
- xii. Temporary Speed Restriction (TSR) of 30 kmph to be imposed at least one day in advance for preliminary works. The trenches for insertion of cutter bar and chain are required to be dig in advance after imposition of TSR. The size of the pit should be 1m wide (along direction of turnout) for which necessary readjustment of sleeper spacing/removal of sleeper and placement of wooden blocks may be done before block, preferably on same day of traffic block, Length of pit will be based on number of extension piece proposed to be used for that particular section of turnout. The depth of the pit should be up to formation level (if possible as site condition allowed). Location and number of pits will depend upon number and location of extension pieces and scheme of work (single block/two blocks).

Manually deep screen those turnouts, exit and normal sleepers behind Back of Crossing & Cross over portions, which cannot be deep screened by BCM

2.3 Pre-Block activities by S&T department

- i. If changing direction of point motor sleeper is required and feasible, same may be preferably carried out in a joint operation with S&T department in a separate and advance block. While S&T department will provide competent supervisory staff, required Gr 'D' staff by S&T department are to be provided by Engineering Department.
- ii. Identified, hidden S&T cables are to be removed in advance. Cables having less than 1.0 meters depth from the rail level and coming in cutting width of BCM are to be identified and relocated/or fresh cable should be laid appropriately in advance block.
- iii. To carry out S&T preliminary works, supervisory staff and S&T Black Smith will be provided by S&T and Engineering department shall provide required trackmen/contractor labour to assist S&T supervisors sufficiently in advance of the traffic block. This staff will be continued under S&T supervisor until completion of the line block
- iv. Any infringing location box, axle counters and other S&T installations/gears, signal mast etc. if essentially required to be relocated, it shall be done in advance. Engineering department will provide necessary trackmen/contractual labour for this activity. If any major new S&T installation is required, engineering department will also provide required funds for arranging such new major S&T installations.
- v. If any cable laying is required and feasible, same shall be done at an adequate depth across the affected track portion. Engineering department shall provide necessary trackmen/contractor labour for such work and such trackmen/contractor labour will work under supervision and direction of S&T supervisor.
- vi. S&T staff should fully equip themselves to attend the block with adequate tools, drilling machines, cable bits, wired TLJBs, cable termination boxes etc. Required S&T Supervisors i.e. SSE/JE/ESM/MSM and S&T Blacksmith are to be arranged by S&T department in time.

2.4 Pre-Block activities by TRD/Electric(G) Department

- i. Electrical (TRD) supervisor will be deputed for guiding the engineering department for disconnection and reconnection of electrical bonds.
- ii. In case, any electric cable is infringing, same may be relocated by Electrical (G) department in advance.
- iii. Based upon the lifting/lowering/slewing of track advised by engineering department, need of OHE adjustment and deployment of tower wagon, if any, will be assessed by TRD Department. It may be noted that in most of the cases, the raising/lowering/lifting of track will be minor and hence tower wagon will be required only in few cases.

3.0 Activities during block period

- 3.1 Obtain the necessary traffic block of concerned lines. If adjacent line is infringing, then traffic block of adjacent line is to be obtained. If power block is also required, same may also be obtained.
- 3.2 Block requirement should be jointly signed by Engineering, S&T and TRD supervisors and block cancellation should be jointly given by all the three departments.
- 3.3 Prompt acceptance of block/power block, disconnection memo and speed communication regarding grant of block is required in writing from SM to PWI, SI, Machine staff, TRD staff, The SM should issue necessary documents as early as possible for proper utilization of traffic block.
- 3.4 Work in electrified area is to be carried out as per para 663-666 of IRPWM 2024.
- 3.5 Prior to traffic block, Machine should be brought in position (main line/loop) at nearest possible location of work place (point to be deep screened)
- 3.6 The deep screening of turnout will be from 1.5 rail length before SRJ to 1.5 rail length beyond Back of Crossing (BOC). This will be included around 18 normal sleeper + 5 approach sleepers before SRJ, all sleepers of Turnout (1 to 83 for 1 in 12 & 1 to 54 for 1 in 8.5) & 4 exit sleepers + normal sleepers. Sleepers not possible to be deep screened by BCM are to be attended as described in Para 1.7.2(a) to (c) and 1.7.3
- 3.7 Disconnection of a X-over point will make the entire X-over dysfunctional and concerned SM shall arrange for clamping the points, issue of appropriated paper authority for train operation & Piloting of trains as required from time to time. SM will place necessary collars to mark the affected points and crossings and affected lines and make entries in red ink in TSR.
- 3.8 Whenever required, Engineering department shall arrange trained/authorized trackmen/contractor staff for disconnection/ refixing of traction bonds (Structure bonds, Polarity Bonds, L-bonds and cross bonds) and insulation sleeves. Such staff will work under direction and supervision of Electrical (TRD) Supervisor/staff for smooth working during traffic block, preferably this activity is to be done prior to block along with necessary temporary connections.
- 3.9 S&T shall arrange for disconnection and removal of S&T gears such as axle counter, track circuit including TLJB boxes, rodding's, S&T cables etc. immediately on start of block duly informing traffic staff under acknowledgment.
- 3.10 Cutter bar, including necessary extension pieces may be inserted at proper place in pre-dug trench prior to traffic block.
- 3.11 Deep screening of turnout to be started and carried out with BCM as per agreed scheme during block, addition/removal of extension piece may be carried out as per per-planned scheme.
- 3.12 Any hidden obstructions, if found during deep screening work is to be immediately removed by the engineering staff using gas cutter/CC breaker/any other tool.
- 3.13 If due to any unforeseen reason, block is not likely to be cleared within allotted time period, immediate intimation along with likely time of clearance to be advised to SM/ASM by concerned P. Way/S&T/Electrical supervisor, for information and planning of train operation.
- 3.14 After deep screening of point zone, Engineering Department is to ensure manual packing/UNIMAT packing.
- 3.15 Engineering supervisor will ensure proper setting/housing of tongue rail and working of points to the satisfaction of S&T supervisor at work site & will obtain written acknowledgment from S&T supervisor on the fit memo to be given to operation staff.

- 3.16 S&T department will re-fix their assets and connections. However, refixing of traction bond will be done by Engineering in terms of para 664(2)(h) of IRPWM-2024. Confirmation of completion of bonding work is to be done jointly by TRD and Engineering staff before giving joint fit memo of points and crossings.
- 3.17 If the block is taken during night hours, adequate lighting is to be provided by Engineering department. The lighting arrangements should be continued till completion of engineering work and to facilitate completion of S&T / Electrical works for reconnection adjustment and restoration of normal working of points, track circuits and axle counters, refixing of electrical bonds, OHE adjustment etc.
- 3.18 After completion of work, joint fitness by Engineering, S&T & TRD of turnout point is to be conveyed to SM at the earliest.

4.0 Activities during post block period.

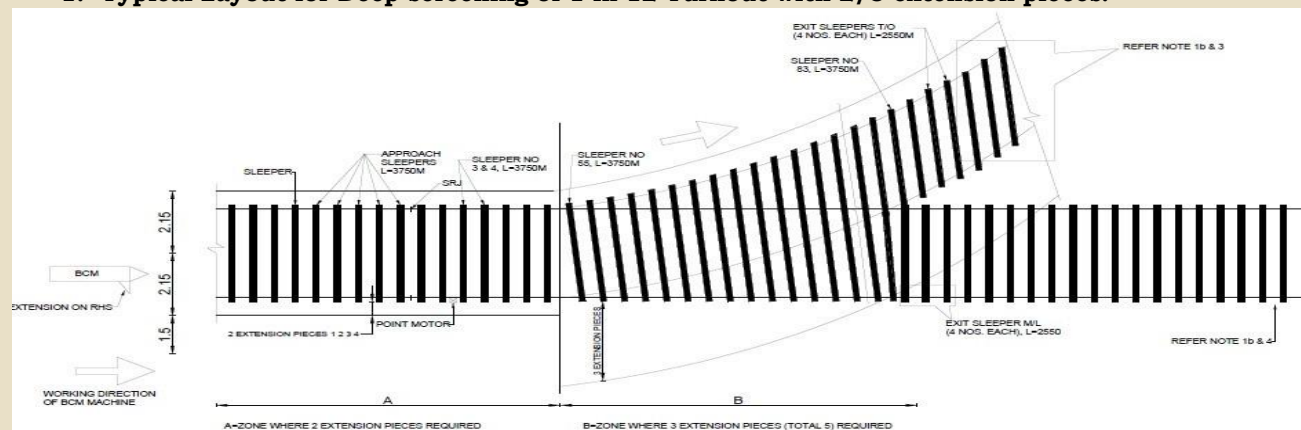
- 4.1 Proposed schedule for speed relaxation after deep screening of points and crossing shall be as para 238(2)(g)(ii) of IRPWM 2024 considering tamping of turnout by UNIMAT which is reproduced below:

Day of Work	Details of work	Speed restriction
1	Deep screening of turnout and initial Manual packing, housing re-fixing of S&T and electrical installations.	20 kmph
2	First machine packing	20 kmph
3	Picking up slacks as required	45 kmph
4	Picking up slacks as required	45 kmph
5	Picking up slacks as required	45 kmph
6	Second machine packing	45 kmph
7	Picking up slacks as required and deployment of tower wagon adjustment of OHE wherever required	75 kmph
8	Picking up slacks as required	75 kmph
9	Third machine packing.	75 kmph
10	Normal sectional speed	
Note:- If turnout is deep screened in two blocks, then first machine packing will be done on 3 rd day and entire activities will shift by one additional day.		

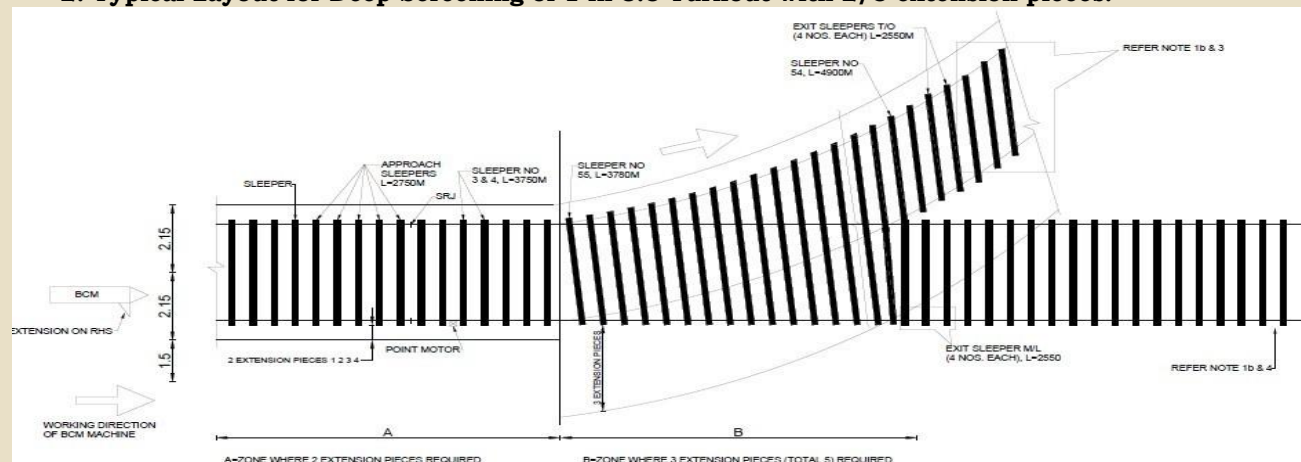
- 4.2 In case, setting of tongue rail gets disturbed/signal flashes then SM/ASM will inform the Engineering & S&T department for immediate attention.
- 4.3 Depending upon the lifting/lowering/slewing of track involved, there may be need of deployment of tower wagon, which will be assessed by TRD Department during planning stage. It may be noted that in most of the cases, the raising/lowering/lifting of track will be minor and hence tower wagon will be required only in few cases. Wherever required, the deployment of tower wagon will be preferably done on 7th day in joint traffic and power block for 3rd machine packing to be taken by Engineering department. Tower wagon will work once tamping machine is removed from turnout area and for working of tower wagon additional 30-45 minutes will normally be required.

- 5.0 With the issue of this revised JPO, earlier JPO issued vide Letter No. 219-W/1/JPO/TP/NCR dt 05.03.2025 stands withdrawn.

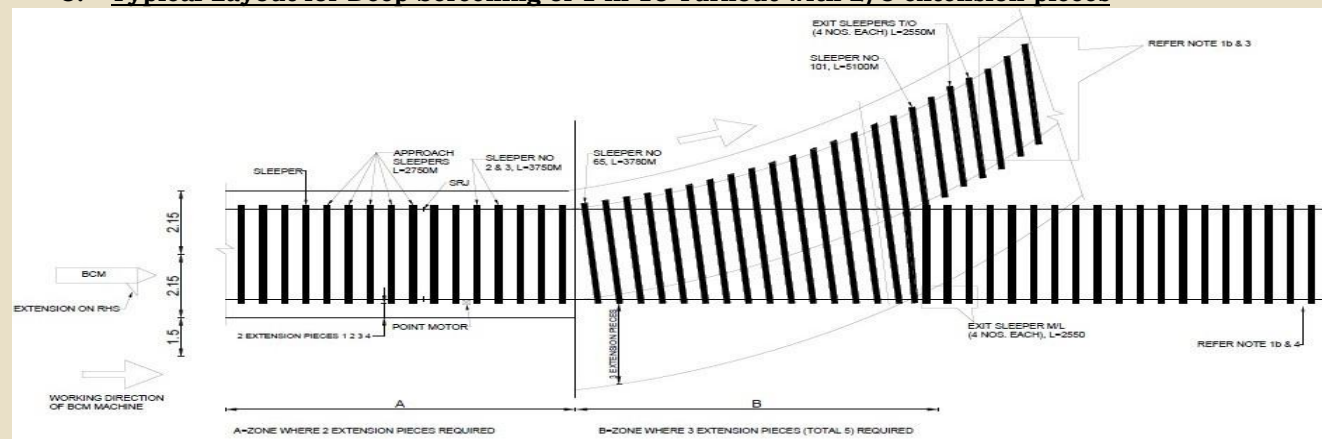
1. Typical Layout for Deep screening of 1 in 12 Turnout with 2/5 extension pieces.



2. Typical Layout for Deep Screening of 1 in 8.5 Turnout with 2/5 extension pieces.



3. Typical Layout for Deep Screening of 1 in 16 Turnout with 2/5 extension pieces



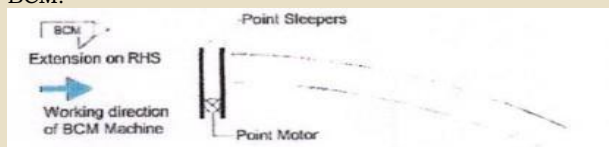
Note:-

1. Due to obstruction by sleepers of other line(turnout side main line as the case may be), with 5 extension pieces, deep screening can be done maximum upto exit sleepers for 1 in 12 & 1 in 8.5 T/O and up to sleeper no. 101 for 1 in 16 T/O Behind these sleepers due to sleepers infringing the trough of BCM, deep screening of one rail length is not possible with 5 extension pieces same can be done by either (a) attaching 2 more extension pieces (total 7 extension pieces) or (b) manually. Deep screening of main line sleepers behind crossing is to be compulsorily done by any of 2 methods.
2. The point motor sleepers, shown in the above drawings are on favorable side i.e. extended on right side of BCM with respect to working direction. If point motor sleeper are on other side, it will be required to either (a) Disconnect point motor & correct the direction of sleeper no 3 & 4 to favorable side in a prior joint block with S&T or (b) Disconnect point motor, remove point motor sleepers during BCM block but prior to deep screening by BCM and reinsert during block after deep screening by BCM & reconnect point motor.
3. For deep screening of M/L sleepers by BCM without any extension piece, these sleepers on T/O side can be manually deep screened.

DEEP SCREENING OF T/O BY BCM

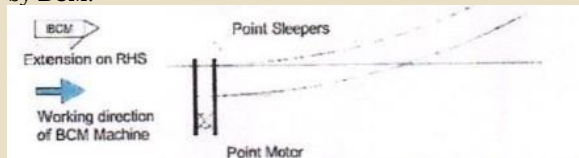
1A

1. T/O is Right hand T/O.
2. BCM will work from SRJ side.
3. BCM will move on Mainline & will deep-screen T/O side by extension pieces.
4. Direction of point motor is on RH side w.r.t to BCM working direction i.e. on favourable direction. Removal of point machine sleeper is not required for deep screening by BCM.



1B

1. T/O is Left Hand T/O.
2. BCM will work from SRJ side.
3. BCM will move on turnout & will deep-screen mainline side by extension pieces.
4. Direction of point motor is on RH, side w.r.t to BCM working direction i.e. on favourable direction. Removal of point machine sleeper is not required for deep screening by BCM.



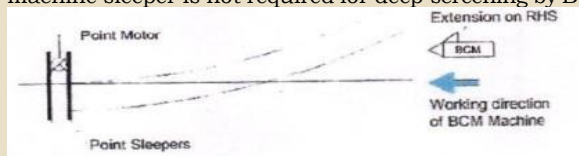
1C

1. T/O is Right Hand T/O.
2. BCM will work from crossing side.
3. BCM will move on turnout & will deep-screen mainline side by extension pieces.
4. Direction of point motor is on RH side w.r.t to BCM working direction i.e. on favorable direction. Removal of point machine sleeper is not required for deep screening by BCM.



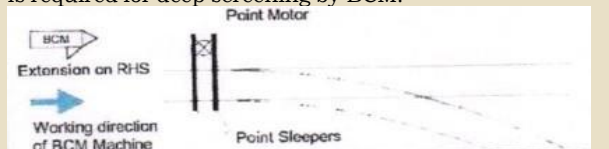
1D

1. T/O is Left Hand T/O.
2. BCM will work from crossing side.
3. BCM will move on mainline & will deep-screen T/O side by extension pieces.
4. Direction of point motor is on RH side w.r.t to BCM working direction i.e. on favorable direction. Removal of point machine sleeper is not required for deep screening by BCM.



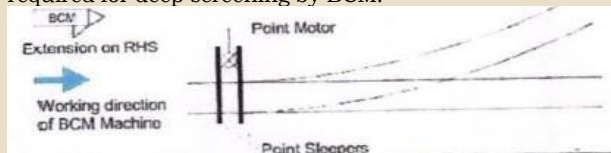
2A

1. T/O is Right hand T/O.
2. BCM will work from SRJ side.
3. BCM will move on Mainline & will deep-screen T/O side by extension pieces.
4. Direction of point motor is on LH side w.r.t to BCM working direction i.e. on unfavorable direction. Correction of point sleeper direction or removal and reinsertion during block is required for deep screening by BCM.



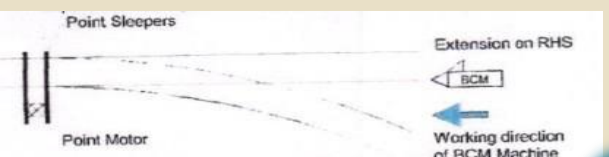
2B

1. T/O is Left Hand T/O.
2. BCM will work from SRJ side.
3. BCM will move on turnout & will deep-screen mainline side by extension pieces.
4. Direction of point motor is on LH, side w.r.t to BCM working direction i.e. on unfavorable direction. Correction of point sleeper direction or removal and reinsertion during block is required for deep screening by BCM.



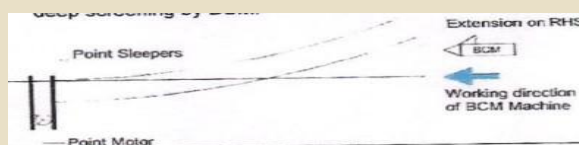
2C

1. T/O is Right Hand T/O.
 2. BCM will work from crossing side.
 3. BCM will move on turnout & will deep-screen mainline side by extension pieces.
- Direction of point motor is on LH side w.r.t to BCM working direction i.e. on unfavourable direction. Correction of point sleeper direction or removal and reinsertion during block is required for deep screening by BCM

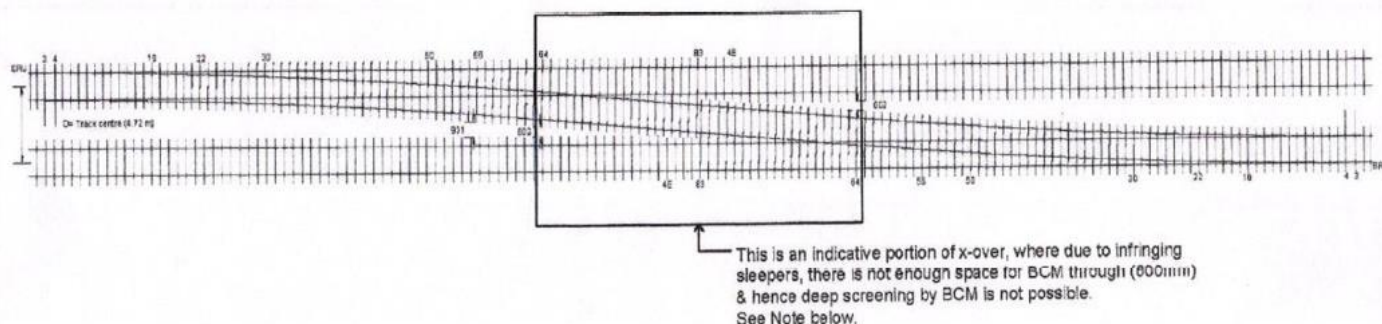


2D

1. T/O is Left Hand T/O.
2. BCM will work from crossing side.
3. BCM will move on mainline & will deep-screen T/O side by extension pieces.
4. Direction of point motor is on LH side w.r.t to BCM working direction i.e. on unfavourable direction. Correction of point sleeper direction or removal and reinsertion during block is required for deep screening by BCM.



TYPICAL POSITION OF X-OVER FOR TRACK CENTRE 4.72m

**Note:-**

1. In X-over, due to infringement by sleepers of other main line, deep screening by BCM is not possible of complete X-over.
2. Such left over sleepers can be deep screened manually.

Annexure-D/1**Ideal requirement of block duration for deep screening of Turnout by BCM in single Traffic Block**

S. No.	Activities	BCM work from SR., End	
		Duration (hrs)	Σ duration (hrs)
1.	Movement of BCM to work site.	00:15	00:15
2.	(a) Setting of BCM including fixing of cutter bar with required extension pieces (2 nos). Cutter bar & extension pieces to be inserted in trench in advance. (b) Disconnection & Removal of S&T Gears & installations, cables etc. by S&T. (c) Disconnection and removal of Traction bonds and Sleeves bonds by Engineering Department under supervision of TRD staff.	00:45	01:00
3.	Working of BCM with 1st set of extension pieces.	00:30	01:30
4.	1 st Extension/ 1 st Reduction of extension Pieces.	00:45	02:15
5.	Working of BCM with 2 nd set of extension Pieces.	00:30	04:45
6.	Shifting of BCM from turnout zone ballasting and Packing by UNIMAT. Note:- Point Zone should ballasted and packing by first irrespective of the fact whether BCM has worked from SRJ side or from Cross side.	00:45	03:30

7.	(a) Reconnection of stretcher bars by Packing of balance crossing portion without keeping UNIMAT machine is switch portion. (b) Reconnection of S&T gears and installation by S&T & Testing of Point by S&T. (c) Reconnection of all Traction bonds & installation sleeves by engineering department under supervision of TRD staff. Confirmation of completion of bonding work is to be done jointly by Engineering and TRD.	01:15	04:45
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Note:-

1. Above is ideal estimated time required for various activities for deep screening of turnout from SRJ in single traffic block. Actual time may vary as per site specific condition and additional site-specific activities like removal and refixing of unfavorable point sleepers, working of tower wagons etc. Wherever possible, Division to endeavor to reduce the time period by detailed advance planning, deployment of sufficient resources and supervisors and real time coordination. In exceptional cases, where deployment of tower wagons is required, additional time for checking by tower wagons will be assessed and provided by Division.
2. To deep screen beyond exit sleepers, additional extension pieces are to be added. For using 3rd set of extension pieces, extra 00:45 hrs will be required. If due to site specific issues, it is not feasible then such left over sleepers are to be deep screened manually or infringing sleepers of other side are to be temporarily opened, shifted laterally in block of BCM working and restored after BCM working.
3. The time for activity 1 can be saved if BCM is brought near the turnout in advance on main/loop line.
4. In case point sleepers are not in favorable directions, then these may be rectified in advance block. Otherwise, these sleepers are to be removed and re-inserted during block period, requiring additional time.
5. In case, any hidden obstruction is found during block, additional time period will be required depending upon size and complexity of obstruction. Engineering/S&T department to do advance identification to minimize such cases. Necessary arrangements of gas cutter, CC breaker, ropes, labour etc. may be made at site to remove such obstructions expeditiously.
6. For tamping and speed raising, separate traffic blocks will be taken.

Annexure-D/2

Ideal requirement of block duration for D/screening of Turnout by BCM in Two Traffic Block			
S. No.	Activities	BCM work from SR End	
		Duration (hrs)	Σ duration (hrs)
1 st Traffic Block (Day-1)			
1.	Movement of BCM to work site.	00:15	00.15
2.	(a) Setting of BCM including fixing of cutter bar with required extension pieces (2 nos). Cutter bar & extension pieces to be inserted in trench in advance.	00:45	01:00
	(b) Disconnection & Removal of S&T Gears & installations, cables etc. by S&T.		
	(c) Disconnection and removal of Traction bonds and Sleeves bonds by Engineering Department under supervision of TRD staff.		
3.	Working of BCM with 1 st set of extension pieces.	00:30	01.30

4.	Shifting of BCM from turnout zone, ballasting and Packing by Manual/UNIMAT. Note:- Point Zone should be ballasted and packed by first irrespective of the fact whether BCM has worked from SRJ side or from Cross side.	00:45	02.15
5.	(a) Reconnection of stretcher bars by Engineering. Packing of balance crossing portion without keeping UNIMAT machine is switch portion. (b) Reconnection of S&T gears and installation by S&T & Testing of Point by S&T. (c) Reconnection of all Traction bonds & installation sleeves by Engineering department under supervision of TRD staff. Confirmation of completion of bonding work is to be done jointly by Engineering and TRD.	01.15	03.30
2nd Traffic Block (Day-2)			
1.	Movement of BCM to work site.	00:15	00.15
2.	(a) Setting of BCM including fixing of cutter bar with required extension pieces (2 nos). Cutter bar & extension pieces to be inserted in trench in advance. (b) Disconnection & Removal of S&T Gears & installations, cables etc. by S&T. (c) Disconnection and removal of Traction bonds and Sleeves bonds by Engineering Department under supervision of TRD staff.	00:45	01.00
3.	Working of BCM with 5no's extension pieces.	00:45	01:45
4.	Shifting of BCM from T/O zone, ballasting and Packing Manual/UNIMAT.	00.45	02.30
5.	Reconnection & Testing of Point by S& T. Reconnection of all traction bonds & Insulation sleeves by Engineering department under supervision of TRD staff. Confirmation of completion of bonding work is to be done jointly by Engineering S&T and TRD.	00.30	03.00

Note:-

1. Above is ideal estimated time required for various activities for deep screening of turnout from SRJ in Two traffic block. Actual time may vary as per site specific condition and additional site-specific activities like removal and refixing of unfavorable point sleepers, working of tower wagons etc. Wherever possible, Division to endeavor to reduce the time period by detailed advance planning, deployment of sufficient resources and supervisors and real time coordination. In exceptional cases, where deployment of tower wagons is required, additional time for checking by tower wagons will be assessed and provided by Division.
2. To deep screen beyond exit sleepers, additional extension pieces are to be added. For using 3rd set of extension pieces, extra 00:45 hrs will be required. If due to site specific issues, it is not feasible then such left over sleepers are to be deep screened manually or infringing sleepers of other side are to be temporarily opened, shifted laterally in block of BCM working and restored after BCM working.
3. The time for activity 1 can be saved if BCM is brought near the turnout in advance on main/loop line.
4. In case point sleepers are not in favorable directions, then these may be rectified in advance block. Otherwise, these sleepers are to be removed and re-inserted during block period, requiring extra time.
5. In case, any hidden obstruction is found during block, additional time period will be required depending upon size and complexity of obstruction. Engineering/S&T department to do advance identification to minimize such cases. Necessary arrangements of gas cutter, CC breaker, ropes, labour etc. may be made at site to remove such obstructions expeditiously.
6. For tamping and speed raising, separate traffic blocks will be taken.

Speedy clearance during breakdown

-Vishal Dutt Shukla
Chief Instructor

In present scenario it is one of the biggest challenges to railway track Machine staff to clear the block section in speedy manner after incidence of driving or power failure. All working units are suppose to lock by means of various equipment provided for emergency attention. It should be ensured that these equipments are in working order. So during troubleshooting we have to adopt the methodology in which minimum time will be needed to fix it and machine can clear the section without any excessive detention. Some possible failures in which emergency system shall be utilized are described with their procedure:-

Sr. N.	Case of failures		Procedure for locking the machine and clearing the block section.	Units to be locked/items to be attend in emergency	Appro. Time Req'd. (in mins)
1	Engine-1	Fail	When engine no. 1 is stopped while working in block section and engine no. 2 remains start then both the chain guides, waste conveyor, lifting unit and roller clamp can be locked by taking the hydraulic oil flow from engine no. 2. Sequence to be followed as below- (1) Keep machine in working mode. (2) Now start Engine -2 & maintain rated RPM @2300. (3) Screen tilting joystick hold in downward (Refer Pic 1) and main stopcock opened. (Refer Pic 2) (4) Operate corresponding stopcock on block (Refer Pic 3) and switch from working cabin for all units. (5) Lock all said working units one by one. (6) Now machine is ready to clear the section by Engine 2	Roller clamp, lifting unit, chain tensioning, waste conveyor, A/S chain trough, D/S chain trough.	30
	Engine-2	Ok			
	Electrical back up	Ok			
	Programmer/ Electrical	Ok			
	Mechanical	Ok			
	Hydraulic	Ok			
2	Engine-1	Fail	All working unit of BCM may be locked by this method when both engines are stopped and only electrical system working at that time. Electric motor pump combination creates flow and generates sufficient amount of pressure to lock all the units. Sequence to be followed as below: - (1) Keep machine in working mode as well as the ignition key at ON position. (2) Turn ON the emergency motor switch in working panel in front cabin. (Refer Pic. 4) (3) Now turn ON the emergency motor KEY and open stopcock lever. (4) Operate corresponding switch from working cabin and lock up all units. (5) similar way locks up all the working units of BCM. (6) Lock all said working units one by one. (7) Now machine is ready to clear the section by any other vehicle.	Roller clamp, lifting unit, chain tensioning, waste conveyor, A/S chain trough, D/S chain trough, LHS & RHS conveyors	35
	Engine-2	Fail			
	Electrical back up	Ok			
	Programmer/ Electrical	Ok			
	Mechanical	Ok			
	Hydraulic	Ok			
3	Engine-1	Fail	If both engine and DC motor unable to lockup the machine units then by using emergency hand pump all units of machine locked. Lever stopcock for each unit connected in distributor block and further connected to pump. By manual operated pump supply given to each unit for lifting the unit to their locking position and lock them. (Refer Pic 5) Lock all said working units one by one. Now machine is ready to clear the section by any other vehicle	Roller clamp, lifting unit, chain tensioning, waste conveyor, A/S chain trough, D/S chain trough, LHS & RHS conveyors	45
	Engine-2	Fail			
	Electrical back up	Fail			
	Programmer /Electrical	Ok			
	Mechanical	Ok			
	Hydraulic	Ok			
4	Engine-1	Ok	If programmer fails then no supply will reach to solenoid through switch. To operate, please push the concerned solenoid manually along with their tank valve solenoid. (Refer Pic 6) Lock all said working units one by one. Now machine is ready to clear the section.	Roller clamp, lifting unit, chain tensioning, waste conveyor, A/S chain trough, D/S chain trough, LHS & RHS conveyors	30
	Engine-2	Ok			
	Electrical back up	Ok			
	Programmer /Electrical	Fail			
	Mechanical	Ok			

	Hydraulic	Ok			
5	Engine-1	Ok	If piston rod or yoke is broken, then please use chain pulley block/ jack (as case may be) method to lock these unit. For chain pulley method a pulley is hanged vertically on the machine frame and with the help of chain and the second part of chain pulley will be fixed with the concerned unit to be lock. (Refer Pic 7) Lock all said working units one by one. Now machine is ready to clear the section.	Concerned unit	40
	Engine-2	Ok			
	Electrical back up	Ok			
	Programmer /Electrical	Ok			
	Mechanical	Fail			
	Hydraulic	Ok			
6	Engine-1	Ok	During this failure we can take hydraulic flow from other units for locking by changing the hydraulic hose.	Concerned unit	30
	Engine-2	Ok			
	Electrical back up	Ok			
	Programmer /Electrical	Ok			
	Mechanical	Ok			
	Hydraulic	Fail			
7	Engine-1	Fail	To deal with the situation when Engine-1, Engine-2, Electrical Backup Motor and Manual Backup Pump fail, we should keep 40 meter (approx.) hydraulic pressure pipe of No. 04 on the machine. When such a failure occurs, with the help of this pipe we will lock all the units of the machine one by one by taking the flow of hydraulic oil from the other machine (tamping machine or BCM).	Roller clamp, lifting unit, chain tensioning, waste conveyor, A/S chain trough, D/S chain trough.	30
	Engine-2	Fail			
	Electrical back up	Fail			
	Manual backup pump	Fail			
	Mechanical	Ok			
	Hydraulic	Fail			

To tackle the problems related to driving are done by following procedure: -

Sr .N	Description of failure	Procedure to clear the block section
1	In any individual axle clutch pressure is not coming and wheel is also skidding even when engine is stop.	This failure concerned with mechanical engagement of clutch and declutching not operative. Check the clutch assembly through inspection window for mechanical engagement (Refer Pic. 8). If engaged then try to disengage it by long screw driver. If clutches are not mechanically jammed then there may be some other mechanical failure like bearing, gear and bush etc. inside the axle gear box. In this situation it will take more time to rectify it, so it is advised to clear the block section by isolating the defective axle and clear the block with other driving bogie.
2	Clutch pressure is low or zero in any drive axle assembly and wheel is also skidding but stops skidding when engine is stop.	Check axle clutch ring for broken and check condition of axle clutch bush. Change the defective items. Even after this problem is not rectified then:- (1) If there is sufficient time to work further during block then isolate the concerned axle as per detail prescribed below. (2) If there is no sufficient time is block to work further then lock the machine and clear the block section with one engine only.

Procedure for isolating Axle gear box in case of emergency-

To isolate the axle gear box, some hydraulic dummies (two dummies of 16 number, two dummies of 10 number, one dummy of 8 number and one dummy of 6 number) and one MS cover plate (which has 04 holes of 16 mm at the same distance as the motor mounting bolt holes) are required. First dummy AG and FG pipe from Bush. After this, dummy the 04 hydraulic pipes of the driving motor and remove the motor from the gearbox by opening the mounting bolts of the driving motor. Seal the space left by the opening of the driving motor with a MS cover plate so that no contaminants enter the gear box. Even after this if the clutch pressure remains less than 12 bar, then the pressure switch for working and driving of the defective axle will have to be dummied. Even after this if the clutch pressure remains less than 12 bar then both the pressure switches (working and driven) of the respective axle will have to be dummied by shorting their wires. Now axle gear box is isolated.

Pic 1



Pic 2



Pic 3



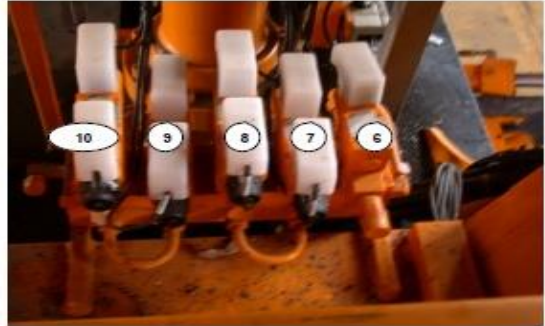
Pic 4



Pic 5



Pic 6



HYDRAULIC ELEMENTS, CHAIN GUIDE

Pic 7



Pic 8



ट्रैक मशीन की गाथा

-सीताराम

अप्रे./जे.ई./टी.एम.सी./प.म.रे.

हम बिगड़े ट्रैक बनाते हैं।
हम ट्रैक मशीन चलाते हैं।

इकलौता **IRTMTC**

सब इन्सट्रक्टर विद्वान जहाँ

ट्रैक मशीनों के पुर्जे-पुर्जे का
मिल जाता है ज्ञान यहाँ।

Tech. JE. SSE

सब सीख यहीं से जाते हैं

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 1 ॥

॥

लाइनिंग या लिफ्टिंग करना हो

?

होल ट्रैक सिफ्टिंग करना हो
वरसाइन कैंट को मीजर कर
आइडल कर्व बनाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 2 ॥

॥

हार्ड कुसन, हो छोटी गिट्टी

गिट्टी में ज्यादा हो मिट्टी

पीवे मैनुअल के कहने पर

BCM तुरंत बुलाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 3 ॥

केवल स्क्रीनिंग करने से
कन्डीशन अभी अधूरी है।

BCM के पीछे-पीछे

टैम्पिंग बहुत जरूरी है।

DGS के चलने पर ही

कॉसन को हटवाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 4 ॥



UTV मंगवालो, कुछ भी

लोडिंग, अनलोडिंग करवाना हो

RBMV याद करो

जब जल्दी माल मंगाना हो

TRT से बिछें स्लीपर

BRM से गिट्टी सिमटाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 5 ॥

रिस्पोन्सिबल ड्यूटी अपनी

24 घण्टे रहें प्रजेन्ट

तेल ग्रीस हाइड्रोलिक ल्यूब

आयल,

डेली का है मेन्टीनेन्स

इंजन ऑवर देख समय से

सातों सिड्यूल कराते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 6 ॥

दिन ड्यूटी या नाइट में हो

कोच में पानी-लाइट न हो

सांप छछूंदर, मच्छर मकड़ी

मुस्किल और बढ़ाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 7 ॥

ले जाने में सिग्नल ग्रीन मिलें

ब्लॉक एक, दो, तीन मिलें

वापस लाने में कन्ट्रोलर

लाइन क्लीयर नहीं दिलाते हैं।

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं ॥ 8 ॥

हम बिगड़े ट्रैक बनाते हैं।

हम ट्रैक मशीन चलाते हैं।

जीवन यापन

-संजय अस्थाना

प्रधानाचार्य/भा.रे.रे.म.प्र.कें.

संकल्पो से भरी सुबह हो,
दिन बीते जब कर्मठता से ।
शाम सुहानी क्यो न होगी,
रात चांदनी निखरेगी ही ।

नये मिले कुछ चेहरे छूट गए,
कुछ के झूठे चेहरे भी यूँ साफ हूए ।
दृष्टि दोष कुछ दूर हूए तो,
खुद पर भी अविश्वास बना ।
चर्चा या निन्दा तो केवल,
सफल व्यक्ति के भाग्य मे होती ।
ख्वाब दिखाते केवल सपने,
विजय दिलाती मन की करूणा ।
मोह डिगाते कर्तव्यो से,
संघर्ष पिरोते शक्ति सदा ही ।
करूणा भरते भाव अनकहे,
नव पथ नव ऊर्जा बरसाते ।

संकल्पो से भरी सुबह हो,
दिन बीते जब कर्मठता से ।
शाम सुहानी क्यो न होगी,
रात चांदनी निखरेगी ही । ॥ 1 ॥

भागते भागते भूल न जाना जीवन को,
तीव्र गति मे छोड़ न देना अपनो को ।
पथ के रोड़ो को चुनकर,
राह बनाता है पुरुषार्थ ।
प्रेरित हो जब मन मुस्काये ,
धूमिल सब अड़चन हो जाती ।
पल भर ही छलती चालाकी,
साथ चले हर पल ही सत्यता ।



संकल्पो से भरी सुबह हो,
दिन बीते जब कर्मठता से ।
शाम सुहानी क्यो न होगी,
रात चांदनी निखरेगी ही । ॥ 2 ॥

अपेक्षा रे हर मन मे उपेक्षा,
निस्वार्थ भाव ही अपनापन ।
सम्बन्धो की उष्मा गरिमा,
जब संजोये दिल से हम ।
अपनेपन के फूल खिलेंगे,
जीवन आँगन महकेगा ही ।
निश्छल उत्सर्जित करे भावना,
प्राण वायु तो महकेगी ही ।

संकल्पो से भरी सुबह हो,
दिन बीते जब कर्मठता से ।
शाम सुहानी क्यो न होगी,
रात चांदनी निखरेगी ही । ॥ 3 ॥

स्वीकारे जब नयी चुनौती,
संकल्प की नवदिशा पनपती ।
बीते को यूँ भूले ना हम,
सीख सदा ले प्रत्युत्तर से ।
पथ पर नव संकल्प पिरोति,
हर खोई सी अभिलाषा ।
विस्तीर्ण गगन हो पथ का जब,
महानाद तुल्य सफलता होगी ही ।
संकल्प भाव नव दिशा दिखाये,
खुशबु हवा मे बिखरेगी ही ।

संकल्पो से भरी सुबह हो,
दिन बीते जब कर्मठता से ।
शाम सुहानी क्यो न होगी,
रात चांदनी निखरेगी ही । ॥ 4 ॥

गंगा: संस्कृति की जीवन रेखा

-संजय अस्थाना
प्रधानाचार्य/भा.रे.रे.म.प्र.कें.



दूध धवल ये अविरल जल यूँ,
भरता नव उल्लास हृदय में!
ऊर्जित उत्साह सदा संप्रेषित,
कल कल करती धार मां गंगे !

मीलो चलने को आतुर मन क्यूँ,
संकल्पित करता भाव गगन में !
लक्ष्य प्रबल जब भावों मे हो,
तीव्र वेग कर्मों में झलके।
ख्वाब पले जब परहित का यूँ,
हृदय स्वच्छ गंगा सा लहरे।

दूध धवल ये अविरल जल यूँ,
भरता नव उल्लास हृदय में !
ऊर्जित उत्साह सदा संप्रेषित,
कल कल करती धार मां गंगे !

मझधार विकट जब भंवरो से यूँ,
स्वच्छ उत्कण्ठित राह प्रवर हो !
राह के रोडे स्वच्छ करे यूँ,
मजिल की आतुरता जन्में।
हर दुखिया का दर्द बटोरे,
कितनों के पुरखों को तारे।
जाने कितने दर्द समेटे,
हर पल बहती धार मां गंगे।

दूध धवल ये अविरल जल यूँ,
भरता नव उल्लास हृदय में!
ऊर्जित उत्साह सदा संप्रेषित,
कल कल करती धार मां गंगे !



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