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GOVERNMENT OF INDIA

INDIAN RAILWAY

MAINTENANCE MANUAL (WORKS)

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PREFACE

Indian Railway is maintaining a very large building stock comprising of residential, office and service Buildings. With the creation of the new assets, the building stock is being added regularly. The gigantic task of maintaining these assets is being discharged by Engineering Department of Indian Railways to the satisfaction of end users through its wide and established system.

The task of maintaining these assets is becoming more challenging due to regular creation of additional assets, growing age of buildings and shortage of staff. The system of outsourcing of maintenance in select areas has already been started. The outsourcing of maintenance is being done by awarding the work of Civil and Horticulture maintenance.

For improving lodging & monitoring Complaints, web/mobile based complaint management system is being implemented by some of the zonal railways/ production units. This has made maintenance services more efficient and saved the users from the hassles of registering complaints in person at Maintenance offices.

This maintenance manual has been framed to incorporate changes in the trends of maintenance system and requirement of the users so as to fulfill the maintenance requirements to ensure smooth and satisfactory functioning of the maintenance.

INDEX

CHAPTER 1
CLASSIFICATIONS

1.0 Introduction

Building Maintenance is work undertaken to keep, restore or improve every facility i.e. every part of a structure or building, its services including Horticulture operations to a currently acceptable standard and to sustain the utility and value of the facility.

The objective of maintenance is: -

(i) To preserve building and services, in good operating and habitable condition.
(ii) To ensure safety of the occupants or the public at large.
(iii) To improve the facilities depending upon the development in the building engineering.

In spite of recent improvements in building technology all buildings deteriorate from the time they are completed. The rate of deterioration depends upon a number of factors and not all the factors are under the control of the occupants.

Maintenance aims at effective and economic means of keeping the building and services fully utilizable. It involves numerous skills as influenced by occupancy and the performance level expected of a building. Programming of works to be carried out to keep the building in a good condition calls for high skills. Feedback from maintenance should also be a continuous process to improve upon the design and construction stages. In this Manual wherever the maintenance of building is referred, it will include the associated services also. These include primarily operations undertaken for maintaining proper condition of buildings, its services and works in ordinary use. The use for which buildings are designed is a prime factor in determining the requisite standard of care.

2.0 Maintenance Services

Practices being followed at present on Indian Railways are:

2.1 Conventional Method of Maintenance: In this method, muster of skilled and unskilled labour is maintained in the office of SSE/JE (in-charge). Every morning work is distributed among the staff based on complaints received and demands from occupants' side.

This system is less efficient, less productive and quality of each petty job cannot be ensured.

2.2 Directed Building Maintenance: In this method, the inspection of quarters & other assets in colony are done at various levels and the repairs required are assessed. Accordingly, the requirement of man and material are assessed and priority fixed. These details are maintained by the supervisors in a register. The work shall then be identified for a particular day in all quarters of a location/block etc. depending upon the manpower and material available. The works are then carried out to bring maximum possible satisfaction to the occupants under the direct supervision of an Engineer.

3.0 Classification of Maintenance/Repairs

The maintenance/repair works shall be classified in under mentioned categories:

- Day to day maintenance/repair
- Periodical maintenance/repair
- Special maintenance/repair

3.1 Day to Day Maintenance/Repairs

Day to day maintenance/repair shall be carried out by Railway in all the buildings/quarters under its Jurisdiction. The works which are to be attended on day to day basis such as removing blockage of drainage pipes, manholes, restoration of water supply, watering of plants, lawn mowing, hedge cutting, sweeping of leaf falls etc. are attended under day to day service facilities. The purpose of this facility is to ensure satisfactory continuous functioning of various services in the buildings.

3.2 Periodical maintenance/repair

The works of periodical nature like white washing, colour washing, distempering, painting, road repairs etc. are called **Periodical Repair works** and these are generally undertaken through system of contracts.
The periodicity of maintenance/repair for a building and structures shall be as per **Annexure 1.1a** and **Annexure 1.1b.**

3.3 Special Repairs

As the building ages, there is deterioration in various parts of the building and services and major repairs and replacement of elements become inevitable. It is necessary to prevent the structure from further deterioration and undue wear & tear as well as to

restore its functionality. The following types of works in general shall be undertaken under special repairs: -

i) Provision of water proofing treatment on the roof.
ii) Through repairs of roads and pavements.
iii) Replacement of flooring, skirting, dado and plaster.
iv) Replacement of doors, window frames and shutters.
v) Replacement of water supply and sanitary installation.

The periodicity of Special Repairs / replacement for a building and structures shall be as per **Annexure 1.2.**

CHAPTER 2

INSPECTION AND MAINTENANCE - RECORDS

1. Inspection and Records of maintenance:-

1.1 Regular inspection of buildings helps in identification of repair required and prioritizing them in consistent with available resources. Inspection shall be carried out periodically with a view to keep the cost of repairs to the minimum and to attend the essential repairs at the appropriate time.

1.2 All assets such as buildings, water supply installations, sewerage installations, drainage arrangements etc. shall be systematically inspected by the SSE/JE (Works) and ADEN as per schedule of inspection given in **Annexure 2.1.**

2. Building Inspection Register:-

The inspection of buildings and quarters shall be recorded in the Inspection Register as per proforma given in **Annexure-2.2.** One page will be allotted for each building. The inspection shall be carried out in such a way that the inspection schedule is spread out throughout the year.

2.1 In case there are doubts about structural soundness of a building, the same should be brought to the notice of higher authorities on a priority basis so as to take prompt and timely remedial action. In fact, safety of the building shall be given a primary place and for this purpose, structural soundness is the most important requirement of the building.

2.2 The insides of staff quarters should be inspected in the presence of or with prior consent of the occupants.

2.3 During monsoon period, exterior repairs or renovation works shall not be carried out except pointing and works considered urgent.

2.4 Requisition for repairs and renovation works should specify the dates of previous works and without this, new work orders should not be issued.

2.5 Planning of repairs should be based on the inspections carried out as mentioned above and should be completed well in time.

3 Monitoring of Maintenance and improvement:-

3.1 Complaint Register:

Complaint Register is an important document required to be maintained at in-charge supervisor's office. All complaints received at SSE/JE (Works)'s office shall be entered in the Complaint Register. Based on the complaint, the staff actually deputed to attend a complaint shall be provided a "Task book" by his supervisor. The "Task book" will mention the quarter no. and the complaint itself. Based on the entries in "Task book", summary information regarding redressal / closure of complaint should be entered into the Complaint Register from supervisor or staff deputed for this purpose by the SSE/JE (Works). The Complaint Register is required to be closely watched to ensure that the problems reported are attended as expeditiously as possible.

A typical format of the Complaint Register is given in **Annexure 2.3**.

3.1.1 The frequency of scrutinizing the Complaint Register shall be as under:-

Sr. No.	Official	frequency of scrutinizing the Complaint Register
1.	SSE/JE (Works)	Daily for stations where he is headquartered and for other stations once in a month.
2.	ADEN	Fortnightly for stations where he is headquartered and for other stations once in two months.
3.	Sr. DEN / DEN #	At discretion

Where both Sr.DEN/DEN, responsible for maintenance of colonies are posted, then Complaint Register should be scrutinized by them separately by rotation.

3.1.2 SSE/JE (Works) shall invariably scrutinize the Complaint Register and then decide the nature of complaints. The complaints of urgent nature i.e. water supply/sanitary problem, leaky roof/walls, outside doors/windows and repairs required for ensuring the structural integrity of the quarters should be attended immediately.

3.1.3 SSE/JE (Works) & ADEN/DEN/Sr.DEN shall record complaints suo-moto as soon as any defect/ repair work comes to their knowledge during inspections.

3.1.4 A computerized Complaint Management system preferably be installed with feedback system.

4 Colony Improvement Group:-

4.1. Colony Inspection Groups (CIG) shall be formed at different levels as under:

a) Colonies located at Zonal/Divisional HQ with number of quarters more than 200 and any other identified colony located at zonal/divisional HQ with the approval of PCE.
b) Colonies located at stations where ADEN is headquartered.
c) Colonies located at road side locations.

4.2. The composition of various CIGs shall be as under:

4.2.1 Colonies located at Zonal/ Divisional HQ having more than 200 quarters or any other important identified colony (with approval of PCE)

(i) Sr. DEN/DEN
(ii) Sr. DPO/DPO
(iii) Sr. DFM/DFM
(iv) Sr. DMO/DMO
(v) Sr. DEE/DEE
(vi) Sr. DSTE/DSTE
(vii) Sr.DSC/DSC
(viii) Representative of Recognized Unions nominated for this purpose in staff colonies

OR

Resident officers (2 Nos.) to be nominated by GM for officers colonies.

4.2.2 Colonies located at stations where ADEN is headquartered

(i) ADEN
(ii) DPO/APO
(iii) AFA
(iv) AEE
(v) ASTE
(vi) ADMO
(vii) ASC; IPF where ASC is not posted
(viii) Representative of Recognized Unions

4.2.3 Road side stations where smaller colonies are available:-
(i) SS/SM
(ii) SSE/Works

(iii) Health Inspector
(iv) SSE (Electrical/G)
(v) IPF

The coordinator in road side stations shall be SSE/Works where headquartered OR SS/SM where SSE/Works is not headquartered.

The representative of the Unions will be residents of that colony and their nomination will be done in consultation with the concerned station branch of the union.

4.3 Periodicity of Inspection:

This CIG shall inspect and hold meeting once in every three months by giving 7 days notice to the members. Other colony residents may also be co-opted to attend these meetings.

4.4. Responsibilities of CIG:

Following items will fall under the purview of the colony inspection group:

(i) Upkeep of colony including cleanliness of quarters, their maintenance , roads, drains, water supply, sanitation, boundary wall, street lighting, etc; priority being accorded in the following order :

- Repairs to ensure structural integrity of building
- Repair to leaky roof
- Repair to outside doors & windows
- Maintenance of proper water supply
- Proper Sanitation and drainage arrangements
- Repair to floorings.
- Maintenance of colony roads, pathways & road berms.
- Fencing & others
- Proper illumination of colony.

(ii) Improvement to substandard quarters.
(iii) To arrange disposal of waste from colony.
(iv) Prevention of encroachments by outsiders as well as by Railway men.
(v) Prevention/action for eviction of encroachment with the assistance of RPF staff.
(vi) Prevention of cattle nuisance in the colony.

(vii) Subletting of quarters.
(viii) Security of the Colony.
(ix) Ensure video-graphy particularly for encroachments.
(x) Shall recommend the staff welfare works/ Maintenance works in planned manner duly prioritizing them based upon availability of resources.

The committees shall issue minutes. These minutes, particularly action for removal of encroachments, should be pursued & ensured by DRM.

5. Cash Imprest to Supervisors:-

SSE/JE (Works) in-charge shall be provided with adequate cash imprest for petty repairs including hiring of minor equipments, plants and services of skilled artisans etc. required for maintenance.

The minimum amount of imprest with SSE (Works) shall be Rs.10000/- wherever not yet provided. This shall be reviewed annually on the basis of expenditure & time of recoupment and enhanced accordingly.

6. Additions and Alterations to Staff Quarters:-

6.1. Additions and alterations to staff quarters only of temporary nature as mentioned in the following para may be permitted to be done by the occupant under para 1976 of the Indian Railways Code for Engg. Deptt. (1993 Edition) with the prior approval Sr.DEN/Dy.CE (custodian of the assets) who shall examine the same from the point of view of availability of space and inconvenience to other occupants etc. However, the Railways reserve the right to dismantle the same if the space is required by administration. Railway shall carry out such works on actual cost basis without any departmental charges etc. as the measure is for staff welfare.

6.2. Following items of works can be executed by Railway at 100% cost of the occupant:

(i) Provision of temporary shed for car/scooter/pets
(ii) Fencing around the individual quarter.
(iii) Paving/flooring around quarter with suitable material.
(iv) Provision of additional cup-board in the quarter.
(v) Changing of Indian W.C. to European W.C. & vice-versa if beyond eligibility.

The above two items can also be done by the occupant.

6.3. Additions and alterations of a permanent nature shall not be carried out without competent sanction. When an existing building is to be enlarged or extended, the external architectural features of the old structures should be adhered to as far as possible.

7. Standard Measurement Registers for Buildings:-

7.1 Standard Measurement Registers in the format given in the **Annexure 2.4** shall be maintained in the offices of the Divisional Engineer, Assistant Divisional Engineer and the Senior Section Engineer (Works).

7.2 The entries made in the registers should be correctly amended when alterations or additions to structures are carried out or when new structures are built.

7.3 The block Nos. entered in the Standard Measurement Registers should correctly tally with the corresponding entries in the building registers.

7.4 The measurement books from which the entries are carried into the Standard Measurement Registers should be securely preserved in the Divisional Engineer's Office.

7.5 Standard Measurement Registers may be utilized for estimating of quantities for periodical white-washing or colour washing and painting as and when required. Particulars of repair works should be carefully scrutinized by the Assistant Divisional Engineer before applying for sanction.

7.6 Date of white washing and painting done block-wise should be indicated on the building.

8. Erection of Steel Work and Roof Trusses:-

The assembly and erection of steel work for structures and roof trusses shall be carried out in accordance with approved plans and "methods of erection" as drawn up by the Engineer-in-charge and shall comply with the Indian Railway Standard Specification for "Steel structures (other than girder bridges)".

9. Maintenance of Roads:-

9.1. The inspections of roads in Railway premises shall be carried out by engineering officials as per Schedule of Inspection given in **Annexure 2.1**. A separate register

for inspection of road shall be maintained by each SSE/JE in-charges as per proforma given in **Annexure 2.5**. Road Lay out plan indicating class, type, width etc. of the road shall be prepared. ADEN shall ensure that all additions/alterations be incorporated in road layout plan and submit to Divisional Office every year in month of April.

9.2. Maintenance of roads needs careful planning. Though repairs like filling up of pot holes, resurfacing at broken patches, shall continue to be done as per the condition of the road at site. The tendency to carry out a routine resurfacing just to improve the outward look of the road should be avoided when it is noted that such resurfacing has, in the past, not been durable. Such a situation may be indicative of an inherent weakness in the design of road structure vis-à-vis the vehicular loads plying over it, or it could be due to poor drainage or a weak sub-grade. Therefore, when it is seen that the road resurfacing in general is not standing well, the adequacy of the road structure design vis-à-vis loading and other aspects like drainage, sub-grade strength, etc. need to be carefully analyzed and repairs shall be planned accordingly.

10.0 Cleanliness in the Colonies:-

Cleanliness will be maintained in the colonies. It will be ensured, in all kinds of maintenance that after day's work, malba is collected from the work place and deposited at suitable identified spots, where residents/users do not throw garbage on it. Suitable provision will be made for disposal of malba on continuous basis, so that the same is not allowed to accumulate / pile up and create unhygienic and unsightly conditions.

Any leakage from the water supply line, sewers or unfiltered water supply line noticed in the colonies will be repaired immediately. Water will not be allowed to stagnate on the roofs, courtyards, roadside to act as breeding place for mosquitoes. All precautions should be taken to keep the colonies neat and clean. In case unhygienic health hazardous conditions are noticed in the portion of areas/service maintained by local bodies, the same will be reported to them and pursued for action. Over head tanks will be provided with lockable covers and Mosquito proof couplings. The occupants will be advised against storage of water in coolers not in use and apply Mosquito repellents in the Cooler's pads etc. to check spread of Malaria.

11.0 Modalities of Maintenance:-

The maintenance works are undertaken through one of the following-

(i) Directly employed labour
(ii) Through contracts.

Whether the work should be carried out through contractual labour or own workforce is decided based on type of work, amount of work & expediency or urgency.

12.0 Safety of Buildings:-

(i) All Buildings/structures borne on the Register of Buildings are required to be inspected once a year by the Assistant Divisional Engineer in-charge to ensure that the building/structure is not unsafe for use. In case of electrical and other installations, the Assistant Engineer (Electrical) should inspect the same and record a certificate to that effect. The Junior Engineers/Senior Section Engineer is also required to inspect such structures/installations twice a year and record certificates to that effect.

(ii) In case of any deficiency found in the structure/installation necessary report should be made to higher authorities and immediate steps taken to get the same inspected by the Divisional Engineer and further action taken to remedy the defects. The Divisional officers will also inspect important buildings /Gardens once a year. He shall bring to the notice of his Sr. Divisional Engineer, cases where he has reasons to doubt the structural soundness of any building/structure/installations and the latter will take such action, as he considers necessary.

(iii) Electrical and Horticulture wings should be informed so that its maintenance is stopped immediately.

(iv) Action for survey report and demolition of such buildings should be taken as per provisions of Indian Railway Works Manual.

13.0 Services to be attended by local bodies and Railway:-

Often it becomes a point of dispute as to which services should be attended by department and by local bodies. Immediately after construction of all services and buildings in a colony are completed, local body is asked to take over the maintenance of bulk services in the colony. These include internal roads/paths, water supply, sewerage system, storm water drains. After these services are taken over by them it is their duty to carry out regular maintenance of these services and maintain cleanliness. Till such time these are not handed over to them, the same will be maintained by Railway. Even where the bulk services are not taken over by the

local bodies regular sweeping of roads/ paths and common areas like lawns, parks and back lanes will be carried out by them.

14.0 Co-ordination with Officials of other Departments: -

The Assistant Divisional Engineer should co-ordinate effectively with officers and staff of other Departments including non Railway department in matters that warrant joint action.

CHAPTER 3

DUTIES OF ENGINEERING OFFICIALS

1. DUTIES OF ASSISTANT DIVISIONAL ENGINEER IN MAINTENANCE PRACTISES:

1.1 Inspection by Assistant Divisional Engineer-

i) The Assistant Divisional Engineer shall conduct inspection in his jurisdiction as per the schedules laid down by the Administration. He should maintain the records of the results of his inspection and ensure compliance of the instructions.

ii) He shall prepare an annual plan of inspection as per laid down scale and shall submit monthly statement of inspection done.

iii) The important inspections to be carried out by Assistant Divisional Engineer are summarized below-

a) Inspection of Buildings and Structures

The Assistant Divisional Engineer shall systematically inspect all buildings and structures periodically as prescribed in Clause 1 of Chapter 2 of this Manual. He shall record brief details of repair works to be carried out and plan to carry out the same.

He should also examine the Complaint Register maintained by Senior Section Engineer (Works) at stations as prescribed in Clause 1 of Chapter 2 of this Manual.

b) Inspection of Water Supply

The Assistant Divisional Engineer shall inspect water supply installations as prescribed in Para 513 & 514 of Indian Railway Works Manual. He shall ensure cleaning of overhead / underground storage tanks and proper disinfection of drinking water supply.

c) *Inspection of Sewerage and Drainage System*

Assistant Divisional Engineer shall inspect sewerage and drainage systems and ensure their efficient performance in association with the concerned Officer of the Medical Department.

d) Assistant Engineer shall periodically inspect land and land boundaries in his Jurisdiction as detailed in Paras 813 and 814 of Indian Railway Works Manual.

e) Assistant Divisional Engineer should associate himself with various Committees and Groups such as the Colony Improvement Group and the Station Improvement Group as decided by the Administration and take prompt action for items pertaining to his jurisdiction.

f) The schedule of inspection for Assistant Divisional Engineer is detailed as per **Annexure 2.1.**

1.2 Water Supply-

Adequate water supply at each loco & coach watering points, stations, platforms, staff colonies and service buildings should be ensured. In advance of the hot weather as well as during hot weather, when shortage of water is experienced in certain areas, the position at sources of supply should be carefully watched and timely action taken to deepen failing wells or to establish alternative sources of supply.

1.3 Training - The Assistant Divisional Engineer should interest himself in training all probationers sent to him for training and see that the training is given according to the specified programme. He should periodically examine the notes made by them.

Note:-*Where Senior Scale Officers are the lowest executive officers, their duties shall be the same as prescribed for the Assistant Divisional Engineers in this Chapter.*

2. Duties OF SSE/JE (Works) (In overall charge) (hereafter called Senior Section Engineer/Works i.e. SSE/Works)

2.1 While Indian Railways permanent Way Manual and Indian Railways Bridge Manual deal with the duties and responsibilities of SSE/work with respect to permanent

Way and Bridge/Tunnel respectively, the following paras deal with their duties and responsibilities with regard to Works. the most essential being:

(i) Inspection and maintenance of :-

- Service buildings, staff quarters and other structures
- Approach roads;
- Water supply, drainage and sewerage systems;

(ii) Inspection and maintenance of bridge and tunnels works as assigned;

(iii) Execution of all new buildings/structural works;

(iv) Accountal and periodical verification of stores and tools in his charge;

(v) Inspection and Maintenance of land boundaries, as specified;

(vi) Removal of encroachments at his headquarters and at other places in his jurisdiction as specified;

(vii) Afforestation and other horticulture works.

(viii) He shall ensure proper training of the staff under him as prescribed in the training modules of the Civil Engineering Department.

(ix) Associate himself with various Committees and Groups such as the Colony Improvement Group and the Station Improvement Group as decided by the Administration and take prompt action for items pertaining to his jurisdiction.

2.2 Inspections - The important inspections to be carried out by Senior Section Engineer (Works) are summarized below:-

i) The Senior Section Engineer (Works) shall systematically inspect buildings and structures in his charge and record brief details of repairs to be carried out, as prescribed in Para 302 of this Manual.

The Senior Section Engineer (Works) shall maintain Complaint Register at all station buildings as specified in para 303 of this Manual and shall check them during his inspections and ensure prompt action/repairs.

ii) The Senior Section Engineer (Works) shall inspect bridge foundations and substructures as per Para no. 117 of Indian Railway Bridge Manual.

iii) Inspection of water supply arrangements - Every Senior Section Engineer (Works) shall have details of total requirement of water, sources of water and their yield, storage capacity and shortfall etc., along with complete water supply plans of yards and staff colonies in his charge and take necessary action as stipulated.

iv) Inspection of Sewerage and Drainage System - Senior Section Engineer (Works) shall periodically inspect sewerage and drainage system and ensure their efficient performance in association with the concerned Official of the Medical Department.

v) Senior Section Engineer (Works) shall periodically inspect land and land boundaries in his jurisdiction as detailed in para 813 and 814 of Indian Railway Works Manual and furnish necessary certificates to the Assistant Divisional Engineer.

vi) The schedule of inspection for Senior Section Engineer (Works) is detailed as per **Annexure 2.1**

2.3 Execution of Works -

i) The Senior Section Engineer (Works) shall be personally responsible for the accurate setting out and execution of all works under his charge according to approved drawings and specifications.

ii) He should plan every work, organize labour in an efficient manner and maintain detailed accounts of materials and tools received and issued. He should exercise frequent checks on the quality and quantum of work being done in his charge and submit progress reports periodically as prescribed.

iii) Additions and alterations to buildings and structures carried out should be carefully noted and quantities shown in the Standard Measurement Register amended as necessary with the approval of the Assistant Divisional Engineer /Divisional Engineer.

2.4 Musters-

i) Each blank muster sheet before issue should be initialed on the top by the Assistant Divisional Engineer. The attendance of artisans, helpers and other staff under him should be checked by the Senior Section Engineer (Works).

ii) The leave availed of by staff should be recorded in the leave register in the leave account before the musters are dispatched to the Divisional office.

2.5 Imprest of Tools and Materials-

i) The Senior Section Engineer (Works) shall examine all tools and plant with the artisans once a month and replace the unserviceable or defective ones or arrange repairs.

ii) He shall ensure that the materials and tools as per scales specified for maintenance of building, water supply and drainage works etc. are available and are adequately distributed at various points according to requirement. Recoupment of shortages should be effected without delay.

2.6 Journal of Daily Duties - The Senior Section Engineer (Works) shall enter the works performed daily in the T.A. journal showing therein his movements by train, trolley or road-vehicle and submit the same to the Assistant Divisional Engineer every month.

2.7 Correspondence and Records - The Senior Section Engineer (Works) shall keep his correspondence up to date and see that all office records, registers and stores ledgers are maintained properly and posted regularly.

2.8 Errors and discrepancies, which are noticed, should be recorded in the statement and the Assistant Divisional Engineer's special attention invited to them.

3. Duties of Senior Section Engineer/JE (Works) (not in Overall charge) (hereafter called Junior Engineer/Works i.e. JE/Works)

3.1 Duties-

While Indian Railways permanent Way Manual and Indian Railways Bridge Manual deal with the duties and responsibilities of JE/work with respect to permanent Way and Bridge/Tunnel respectively, the following paras deal with their duties and responsibilities with regard to Works. The most essential being:

Inspection and maintenance of:

i) Service buildings, staff quarters and other structures
ii) Approach roads
iii) Water supply, drainage and sewerage systems
iv) Execution of works
v) Inspection and Maintenance of land boundaries, as specified

vi) Inspection and Removal of encroachments at his headquarters and at other places in his jurisdiction as specified;

vii) Inspection and Maintenance of afforestation and other horticulture works.

viii) He should work in the Senior Section Engineer (Works) office and assist him as required.

3.2 Knowledge of Rules and Regulations-

i) He shall be well acquainted with the rules, regulations and procedures concerning his work.

ii) He shall ensure that all staff under him are well acquainted with the relevant rules and working methods and efficiently perform their duties.

3.3 Inspections – The important inspections to be carried out by Junior Engineer are summarized below:

i) He shall systematically inspect buildings and structures in his charge and record brief details of repairs to be carried out, as prescribed in this Manual.
He shall maintain Complaint Register at all station buildings as specified in this Manual and shall check them during his inspections and ensure prompt action/repairs.

ii) **Inspection of water supply arrangements** – Every Junior Engineer shall assist SSE(works) in keeping details of total requirement of water, sources of water and their yield, storage capacity and shortfall etc., along with complete water supply plans of yards and staff colonies in his charge.

iii) **Inspection of Sewerage and Drainage System** – He shall periodically inspect sewerage and drainage system and ensure their efficient performance as prescribed in this Manual.

iv) He shall periodically inspect land and land boundaries in his jurisdiction and furnish necessary certificates to the SSE (Works).

v) The schedule of inspection for Junior Engineer (Works) is detailed as per **Annexure 2.1.**

3.4 Execution of Works-

i) Junior Engineer (works) shall assist SSE (Works) for the accurate setting out and execution of all works under his charge according to approved drawings and specifications.

ii) He should plan every work, organize labour in an efficient manner and maintain detailed accounts of materials and tools received and issued.

3.5 Measurement of Works – He shall be responsible for proper measurement of contractual works as per powers delegated to him as per Paras 1315 to 1317 of the Indian Railway Code for Engg. Deptt. (1999 Edition).

3.6 Journal of Daily Duties – Junior Engineer (Works) shall keep record of the works performed daily showing therein his movements by train, trolley or road-vehicle and submit the same to the SSE (Works) every month.

3.7 Correspondence and Records – Junior Engineer (Works) shall keep his correspondence up to date and see that all records, registers and other correspondence are carried out and submitted to Senior Section Engineer (Works).

CHAPTER 4

WATER TREATMENT

1. Quality of Water:–

It should be ensured that the water supplied is clear, potable, free from pathogenic organisms and odour. Water should be free from minerals which could produce undesirable physiological effects.

For physical and chemical standards, BIS 10500-1991 (as amended) should be adhered to for drinking water supply. Some of the major provisions are listed in **Annexure 4.1** for guidance.

Water supplied separately for purposes other than drinking shall be absolutely safe from bacteriological contamination so as to ensure that there is no danger to health of the users due to such contamination.

2. Water Samples for Analysis:-

Whenever the quality of water from any source of supply or from taps is to be tested and samples are required to be collected by the Engineering staff, the following procedure should be followed:-

(a) Sterilized glass-stoppered bottles available with the Divisional Medical Officer should be obtained. Bottles separately available for bacteriological or chemical examination have to be appropriately used.

The paper cover of the stopper should be removed just before taking the sample. The stopper should be removed just before filling the bottle and replaced immediately after. The stopper should be held from the top while the bottle is being filled. Contamination while filling the bottle must be avoided. There should be no external contact with the mouth of the bottle or the part of the stopper that goes into it. The bottle should be filled to about 25mm below its neck.

(b) When samples of water are taken from a tap, the mouth of the tap should be heated by a spirit lamp for 3 minutes. Water should then be allowed to flow for 5 minutes before the sampling bottle is filled.

(c) If the sample is to be obtained from a tank or a reservoir or a river, the unopened bottle is to be held in water about 300 mm below the surface and away from the edge without disturbing the bed. The stopper should then be removed, the bottle withdrawn when full; a few drops of water poured out and the stopper replaced and tied down.

(d) Well water should be collected by lowering the bottle (tied with a piece of weight) into the well by a string attached to the neck; the stopper should be removed by another string tied to it and the bottle filled in with water, not from the surface but from a point a metre or two above the bottom of the well. If collected from a tube-well with a pump, the water should be allowed to flow for about 20 minutes.

(e) Bottles containing samples of water should be properly labeled, packed around with ice and saw-dust and sent without any delay to reach the Divisional Medical Officer. Satisfactory packing and expeditious dispatch are essential for a proper bacteriological examination. Where proper Railway facility is not available, the testing of water samples may be undertaken at approved laboratories.

3. Method of Treatment:-

The aim of water treatment is to produce and maintain water that is hygienically safe, clean and potable in an economical manner. Treatment should ensure the desired quality at the end points of consumption.

The method of treatment to be employed depends on the nature of raw water and the desired standards of water quality. The unit operations in water treatment constitute aeration, flocculation (rapid and slow) and clarification, filtration, disinfection, softening, de-ferrization, de-fluoridation and water conditioning. Different combinations are possible to achieve the required quality of water. The choice of any particular sequence of treatment will depend not only on the quality of the raw water available but also on the comparative economics of alternative treatment steps to get desired quality.

In the case of ground water storage which are well protected, where the water has turbidity below 10 NTU and water is free from odour and colour, plain disinfection by chlorination is adopted before supply.

Where ground water contains excessive iron, dissolved carbon dioxide and odorous gases, aeration followed by flocculation and sedimentation, rapid gravity or pressure filtration and disinfection may be necessary.

Conventional treatment including pre- chlorination, aeration, flocculation and sedimentation, rapid gravity filtration and post- chlorination are adopted for highly polluted surface waters laden with algae or other micro organisms.

Water with excessive hardness will need softening by conventional method or by ion exchange method.

Explanatory Handbook should be referred to for details of various methods of water treatment.

4. Disinfection of Water:- Water treatment processes described in paragraph above remove micro organisms to varying degrees. For utmost safety of water for drinking purposes, disinfection of water has to be done to remove disease producing organisms before it enters distribution system. Disinfection is also required to prevent contamination of water during its transit from the treatment plant to the place of its consumption. The efficiency of disinfection depends on the nature of disinfectants. For treatment on larger scale, chlorination is generally used as treatment for disinfection. Chlorine can be applied in water by using bleaching powder, chloramines or as free chlorine gas. A minimum of 30 to 60 minutes contact time must be provided before delivery of water to the consumer.

Utmost care shall be taken for storage and use of disinfectants. All safety precautions as laid down in relevant codes shall be taken.

Sufficient number of chlorinators in working conditions should be available with the Inspectors of works. To decide the quantity of chlorine to be added, Inspector of works should find out breakpoint chlorination and accordingly chlorinate the supply.

5. Residual Chlorine:– Minimum residual chlorine available at the farthest end shall be 0.2 mg per litre. However, where distribution is long and complex it may be difficult to maintain the minimum residual value and in such cases re-chlorination may be carried out in the distribution system.

During monsoon months or if specific complaints are there, super-chlorination more than 2 ppm of chlorine may be resorted to effectively get rid of bacteria.

Sr. Section Engineer (Works) should frequently check the concentration of residual chlorine at the consumer point by orthotolodine test. In this test 100 ml of chlorinated water sample is collected in the test tube. 1 ml of orthotolodine solution is added to it. The colour formed is noted, value of the residual chlorine is directly determined by comparing the colour so obtained with the standard chart of colours of non-chlorine residuals. Divisional Engineer should ensure sufficient number of equipment with all the field units.

6. High Level Storage:-

The tanks shall be constructed of reinforced concrete, brick masonry, ferrocement precast, mild steel, stainless steel or plastic. Tanks made of steel may be of welded, riveted or pressed construction. The metal shall be galvanized, coated externally

with a good quality anti-corrosive weather resistant paint. Lead based paint shall not be used in the tank.

6.1 Storage Capacity –

Normally, the storage capacity should be equal to the higher of the following figures:-

(a) **With efficient stand-by pump:-**

(i) One-quarter the maximum water consumption in 24 hours

(ii) One-third the normal water consumption in 24 hours

(b) **Without stand-by pump:-**

(i) One-third the maximum water consumption in 24 hours.

(ii) One-half the normal consumption in 24 hours.

Local conditions should however be considered when deciding on the storage capacity. Each tank may be partitioned to facilitate cleaning or repairs.

6.2 Maintenance and Cleaning of Storage Tanks-

a) For the inspection, maintenance and painting of steel-work, action should be taken as detailed in the Indian Railways Bridge Manual.

b) Tanks used for the storage of drinking water should be rubbed and cleaned at least once in **six months.** The cleaning of water tank and disinfection should be carried out as per recommended procedure. Tanks used for the storage of water for locomotive and carriage washing purposes should be scrubbed and cleaned at least once in **six months.**

Reports on cleaning of tanks should be submitted to the Assistant Divisional Engineer by the Sr. Section Engineer (Works) who shall maintain a register with complete particulars for the purpose. The periodical reports should include information regarding the condition of external and internal painting and corrosion, if any.

The dates of cleaning and of both external and internal painting should be painted on one side of the staging in such a manner that these are readily visible.

6.3 Float Gauges and Scouring Sluices-

Every high level storage tank should be provided on the outside with a float gauge with a scale marked in metres divided into 5 parts to indicate the water level in the tank.

Every storage tank whether at high level or at ground level should be provided with a sluice at its sill level to facilitate the cleaning of the tank.

6.4 Protection against Pollution -

High service storage tanks, for drinking water in particular, should be covered and provided with gauze wire to obviate pollution by birds and growth of algae.

6.5 Protection against Pollution near Sewer and Drains-

(a) **Horizontal Separation -** A water main should be laid such that there is at least 3 m separation, horizontally from any existing or proposed drain or sewer line. If local conditions prevent this lateral separation, a water main may be laid closer to a storm or sanitary sewer, provided that the main is laid in a separate trench, or on an undisturbed earth shelf located on one side of the sewer at such an elevation

(b) **Vertical Separation -** In situations where water mains have to cross house sewer, storm drain, or sanitary sewer, it should be laid at such an elevation that the bottom of the water main is 0.5 m above the top of the drain or sewer with the joints as remote from the sewer as possible. This vertical separation should be maintained for a distance of 3 m on both sides measured normal to the sewer or drain it crosses that the bottom of the water main is at least 0.5 m above the top of the sewer.

6.6 Maintenance and Operation of Water Supply Installations:-

6.6.1 The Engineering Department shall be responsible for-

(i)The adequacy of water supply at all sources, permanent and auxiliary.
(ii) The dispatch of samples of water if so required to be done, from water supply sources, storage- tanks or taps for chemical and bacteriological analysis to the Medical Department.
(iii) The maintenance and operation of water purification plants.
(iv) The maintenance and periodical cleaning of all storage tanks.
(v) The maintenance of all pipe lines and specials, water- taps in station yards and colonies, fire hydrants at stations, goods sheds and loco sheds.

(vi) The maintenance and periodical testing of all water meters wherever installed. The testing should be carried out at least once a year.

(vii) The periodical testing and joint- recording of consumption in meters at such points where supply to the railway is made by outside bodies.

(viii) Wastage and leakage detection survey should be carried out and action taken to reduce the losses.

6.6.2 Inspections by Assistant Divisional Engineer and Staff-

(a) The Assistant Divisional Engineer and Sr. Section Engineer (Works) should inspect as per the prescribed periodicity all water supply installations and pipelines and ensure their maintenance in efficient condition. The Sr. Section Engineer (Works) should be equipped with an adequate imprest of materials such as pipes and specials and water taps of requisite sizes and the necessary tools to facilitate immediate attention on repairs as and when required.

(b) Storage-tanks for drinking water and for flushing purposes over offices, bungalows and quarters should be inspected frequently by the Sr. Section Engineer (Works) and their cleanliness ensured. Complaints from residents should be promptly attended to.

6.6.3 Water-Supply Plans –

Up to date plans should be maintained in the Divisional Engineers', Assistant Divisional Engineers' and Sr. Section Engineer (Works) Offices of every water supply system showing the source, pumps and pumping particulars, rising mains, storage tanks and capacities, the distribution mains, service pipes, hydrants and taps. The diameter***,*** type of pipe-lines ***and month/year of laying*** should be clearly indicated on the plans and on the longitudinal sections.

Where there are separate supplies for drinking and other requirements, the respective systems should be shown on the plan in different colours or on separate plans.

In the drawings of water supply works mains, branch mains and distributaries should be shown and on it the points of supply, the lengths of pipes and the reduced level of all junctions should be mentioned. The drawing should also show all the details of diameter, depth below ground level, gradient from source to farthest point of distribution and horizontal & vertical distances from adjacent sewer lines & septic tanks. Detailed connection of the proposed pipeline with the existing network should also be shown in detail. Size of trench should be excavated as per specification.

The Assistant Divisional Engineer shall ensure that water supply plan is corrected as and when there is any addition or modification in pipeline. In case of Construction Organization implementing any water supply scheme or augmenting the existing scheme, a copy of the water supply plan shall be handed over to Open Line as and when the scheme is completed.

6.6.4 Water Purification Works-

(a) Periodical analysis of water –

Samples of raw, filtered and sterilized water from filter- plants should be sent for examination and certification once a month or as may be prescribed to the Divisional Medical Officer who will advise, if deemed necessary, on the appropriate dosage of the coagulant or the sterilizing agent. Reports on water analysis received from the Divisional Medical Officer should be carefully filed, the action taken on each report being recorded. Samples for chemical examination should be sent for testing once in six months or once before monsoon and once after monsoon.

(b) Maintenance of water works –

Detailed instructions in regard to the maintenance and operation of filtration and chlorination plants at each installation shall be issued by the Chief Engineer. It should be ensured that-

(i) The plants, in general, with their ancillaries are maintained in a perfectly sanitary and hygienic condition;
(ii) Aeration of raw water is effected by spraying through the air, cascading over obstacles.
(iii) The sedimentation tanks or basins are drained at such intervals as prescribed;
(iv) Coagulants, either in the form of dry powder or in aqueous solution, are added in the correct proportion according to the turbidity of raw water;
(v) The filters are cleaned and washed with pure water at such intervals as prescribed;
(vi) The filtered water is sterilized either by adding liquid chlorine or bleaching powder strictly to the dosage specified.
(vii) Disinfectants are stored properly and all safety precautions are taken be available at each installation together with the duty-lists of the staff posted there.

The water works staff in-charge shall strictly adhere to the prescribed rules. A copy of the detailed instructions on the operation of plant and purification process should be available at each installation together with the duty-lists of the staff posted there.

(c) Supervision by Assistant Divisional Engineer-

(i) The Assistant Divisional Engineer shall inspect each installation as per the prescribed periodicity and record his notes in the Inspection Register maintained for the purpose. He should follow the course of water from the point of intake and through the different treatment stages to the point of delivery to the distribution mains and arrange to remedy defects noticed.

ADEN should arrange for a joint detailed inspection by Sr. Section Engineer (Works) of the pumping machinery once a year or as may be prescribed along with the staff of the Mechanical/Electrical Department and ensure prompt compliance to repairs or replacements required.

(ii) The Assistant Engineer should check the following:-

- Stock account showing transactions of stores
- Log book for filtration plant

(d) Inspection by Divisional Engineer –

The Divisional Engineer should inspect the water works in every detail as per prescribed periodicity and record his notes in the Inspection Register maintained for the purpose.

(e) Inspection Register –

An Inspection Register should be maintained at each water purification work to enable every Inspecting Officer of the Engineering and Medical Departments to record notes. Prompt action on inspection notes shall be ensured.

7. Sanitary Protection of water Supply Installations-

7.1 Reservoirs/Ponds:

(i) The reservoir/ponds should be fenced to prevent any outside or unauthorized use.
(ii) The water in the reservoir shall not be used for any unauthorized purposes like bathing, washing clothes, cleaning of utensils etc.
(iii)The water shall be periodically treated with bleaching powder or a disinfecting agent.

7.2 Overhead Tanks:

(i) The tanks should be cleaned and lime applied on walls as per laid down schedule.
(ii The water shall be regularly disinfected.

7.3 Protection of wells used for drinking:

(i) The exposed area of wells outside and inside shall be plastered to a sufficient depth to prevent percolation of water into the well through the steining at shallow depths.

(ii) Parapets should be sufficiently high to prevent entry of spilled-water and water flowing at ground level. The top of steining should be edge-finished (triangular shape) to avoid buckets or vessels being kept thereon.

(iii) There should be a paved platform around the parapet of the wells, with a drain to lead the spill-water sufficiently away.

(iv) The ground around the well for a radius of at least 50m should be kept thoroughly clean to guard against pollution.

(v) No bathing or washing of clothes should be permitted near a well supplying drinking water. Devices for drawing water should be such as to prevent pollution.

(vi) Open wells should be cleaned when necessary, preferably during dry season. The sides should be scrapped to clear moss and other vegetation growth. De-silting of wells should be done as necessary. Quick lime should then be applied to the sides and bottom of the well (wherever dry). This work should be carried out by the Sr. Section Engineer (Works) and a report sent to the Assistant Divisional Engineer.

(vii) Disinfection of well should be carried out as often as necessary. The work is usually undertaken by the staff of the Medical Department. At gang quarters and gate lodges between stations, the Sr. Section Engineer (Works) should arrange for the disinfection of staff-wells.

8. Sanitary Inspection-

A sanitary inspection is an on-site inspection of a water supply facility to identify actual and potential source of contamination. The schedule of inspection shall be as per **Annexure 2.1**. The physical structure and operation of the system and external environmental factors (such as latrine location) are evaluated. This information can be used to select appropriate remedial action to improve or protect the water

supply. Sanitary inspections should be carried out for all new sources of water before they are used for drinking water and on a regular basis. The sanitary inspection forms are given in **Annexure 4.2**.

All positively tested samples using field test kits (with certain probability of contamination) shall be referred to the nearest district/ sub-divisional water quality testing laboratory for confirmation.

CHAPTER 5
DRAINAGE, SEWERAGE AND SANITATION

MAINTENANCE OF SEWERAGE, DRAINAGE AND SANITARY ARRANGEMENTS

1. General-

Due consideration shall be given to maintenance requirements at the time of designing sewerage system. Provision of openings, staircases and due provisions for eliminating gas hazards, should be ensured.

2. Sewer Lines-

a) Maintenance of sewers involves removal of stoppages and clearing out the deposits. Clogging may be due to grit deposition, penetration of roots from adjoining trees, growth of fungi or stagnation of sewage. Sewers may be flushed by fire hose from the nearest fire hydrant if conveniently located if the stoppage is too stubborn to respond to flushing, it may be removed by rodding from the next manhole or it may be necessary to dig down to the point where the trouble exists.

(b) Records of the location and depth of all sewers and house connections should be kept in sufficient detail and accuracy for locating any sewer in case it becomes necessary to dig it up. Connections of house drainage to the sewer should be permitted to be done only by competent and experienced labour.

(c) Sewer line gangs, if under the Engineering Department, should attend to the cleaning and flushing of all sewers at least twice every month. Manholes should be left open for few hours for gases to escape, before any man enters into it.

3. Open Sullage Drains-

Open sullage drains should be maintained in a thoroughly satisfactory condition; cleaning and flushing should be done at least twice a month or more often, as considered necessary. Soak-pit should be dug up and cleaned at least once a month or as required and fresh broken stones, broken bricks or cinder filled in.

4. Storm Water Drains-

Special examination should be made of storm water drains, particularly before the commencement of monsoon, to ensure correct grades. Out falls should be particularly examined with a view to ensure satisfactory disposal of the storm water.

5. Disposal Works-

All sullage disposal works should be examined once a quarter and their sanitary condition ensured. When an appreciable extent of silting has taken place, septic tanks should be cleaned in co-ordination with the Medical Department whose responsibility lies in either doing it on contract or departmentally.

6. House Connections-

Surface drains should be examined frequently and there should be no stagnation of sullage near the premises. Gully traps with gratings should be examined wherever installed and prompt action taken for renewal and replacements necessary.

7. Sanitation and Conservancy Arrangements:-

a) **Sanitation –** Sanitation means maintaining a clean environment so that the beneficiaries stay in a neat and hygienic environment. Railway stations, colonies and all work places are to be maintained in a hygienic and clean manner and adequate care is to be taken at the planning stage itself. Keeping this objective in view, special emphasis is laid on the collection and disposal of refuge, sewage and sludge in a scientific manner.

b) **Conservancy Work** -Conservancy work is classified as - (i) indoor conservancy and (ii) outdoor conservancy.

(i) *Indoor conservancy* - This comprises the cleaning of indoor sanitary installations, the collection of refuse generated in the individual quarters/offices like floor sweeping, domestic refuse etc. and transporting it into the refuse bins. This is the responsibility of the user of quarter /office in charge.

(ii) *Outdoor conservancy* – This comprises of cleaning of Railway colonies, Railway stations, circulating area, Railway yards, office, Coaches and Track. This is a multi-displineary approach by various departments of the Railways viz. Medical, Traffic, Engineering and Mechanical. The medical department maintains sanitation/out door conservancy at Railway colonies where Health Inspectors are posted. The Traffic Department maintains other colonies, stations, Goods offices, parcel offices etc. the mechanical department looks after the sanitation and cleanliness of the coaches. The Engineering department does so for the track and underground sewerage areas.

8. Maintenance of Sewerage System-

While assisting sewer maintenance crews entering a deep manhole or sewer where dangerous gas or oxygen deficiencies may be present, the following precautions should be taken:

a) Allow no smoking or open flames and guard against sparks

b) Erect warning signs.

c) Use only safe gas-proof electric lighting equipment.

d) Test for noxious gases and oxygen deficiencies (presence of hydrogen sulphide is detected using lead acetate paper and that of oxygen by safety lamps).

e) If the atmosphere is normal, workmen may enter with a safety belt attached and with two men available at the top. For extended jobs, the gas tests shall be repeated at frequent intervals depending on circumstances

f) If oxygen deficiency or noxious gas is found, the structure shall be ventilated with pure air by keeping open at least one manhole cover each on upstream and downstream side for quick exit of toxic gases or by artificial means. The gas tests shall be repeated and the atmosphere cleared before entering. Adequate ventilation shall be maintained during the work and the test repeated frequently.

g) If the gas or oxygen deficiency is present and it is not practicable to ventilate adequately before workers enter a manhole, mask shall be worn and extreme care shall be taken to avoid all sources of ignition. Workers should be taught how to use the oxygen hose equipment. In these cases, they shall always use permissible safety lights (not ordinary flashlights), rubber boots or non-sparking shoes and non-sparking tools.

h) Workmen descending a manhole shaft to inspect or clean sewers, shall try each ladder step or rung carefully before putting the full weight on it to guard against insecure fastening due to corrosion of the rung at the manhole wall. When work is going on in deep sewers, at least two men shall be available for lifting workers from the manhole in the event of serious injury.

i) Portable air blowers, for ventilating sewer manhole are recommended for all tank, pit or manhole work where there is a question of the presence of noxious gases, vapours or oxygen deficiency. The motors for these shall be of weather proof and flame-proof types; compression ignition-diesel type (without sparking plug). When

used, these shall be placed not less than 2m away from the opening and on the leeward side protected from wind, so that they will not serve as a source of ignition for any inflammable gas which might be present. Provision should be made for ventilation and it should be of the forced type which can be provided by a blower located at ground level with suitable flexible ducting to displace out air from the manhole.

9. Periodical Cleaning of Drainage-

System - The following operations shall be carried out during periodical cleaning of a drainage system:-

a) The covers of inspection chambers and manholes shall be removed and the side benchings and channels scrubbed

b) The interceptive trap, if fitted, shall be adequately cleaned and flushed with clean water. Care shall be taken to see that the stopper in the rodding arm is securely replaced.

c) All lengths of main and branch drains shall be rodded by means of drain rods and a suitable rubber or leather plunger. After rodding, the drains shall be thoroughly flushed with clean water. Any obstruction found shall be removed with suitable drain cleaning tools and the system thereafter shall be flushed with clean water.

d) The covers of access plates to all gullies shall be removed and the traps plunged and flushed out thoroughly with clean water. Care shall be taken not to flush the gully deposit into the system.

e) Any defects revealed, as a result of inspection or tests shall be made good.

f) The covers or inspection chambers and gullies shall be replaced, bedding them in suitable grease or other materials; and

g) Painting of ladders/rings in deep manholes and external painting of manhole covers shall be done with approved paints.

10. Covered Storm water Drains-

All storm water drains shall be periodically rodded by means of drain rods and a suitable rubber or leather plunger. After rodding, they shall be thoroughly flushed

with clean water. Any obstruction found shall be removed with suitable drain cleaning tools.

11. Subsoil Drains-

All subsoil drains shall be periodically examined for obstruction at the open joints due to the roots of plants or other growth.

12. Responsibilities of the Assistant Divisional Engineer and Staff-

The Assistant Divisional Engineer and the Sr. Section Engineer (Works) should inspect all drainage systems in their charge and ensure their maintenance in an efficient condition. Complaints from residents should be promptly attended to.

CHAPTER-6

GARDENS & PLANTATIONS, DISPOSAL OF GRASS AND OTHER NATURAL PRODUCTS

1. GARDENS AND PLANTATIONS:-

1.1. Role of Engineering Department-

The Engineering Department is responsible for tree plantation and maintenance of horticulture in common areas in stations, colonies, offices, community parks etc. Staff of other departments should also be encouraged to associate in these activities.

1.2. Planning for Plantation-

For systematic plantation, each Division should prepare 'tree planting plan' for every subdivision and plantation work should be carried out accordingly. On all construction projects, bulk afforestation of suitable variety should be done in vacant land as an environmental improvement measure.

Provision for this should be invariably made in the estimate. For new colonies/townships, assistance of specialized agencies may be taken for landscaping.

1.3. Nursery-

Nurseries, wherever feasible, may be maintained to cater to the requirements of the railway establishments. The resources of Forest Department and nurseries in the public/ private sector may be tapped to meet the requirements of the railway.

1.4. Planting and Care of Young Trees-

a) Sites and species for plantation should be so selected that when the trees grow up they do not interfere with telegraph wires or obstruct the view around curves or of station signals or of level crossings.

When planting, it should be seen that the roots are not exposed to sun more than necessary. Water should be fed to the young tree daily until it is strongly rooted, the

top surface of the soil being broken up about once a week. At way side stations where Engineering staff is not posted, daily watering may be entrusted to station staff.

b) Soon after planting, the young tree should be supported firmly with a strong and straight bamboo or stake about 3 metres in height and the trunk tied to the stake by means of a cord over sackcloth. A tree-guard or protection should be fixed around it.

The tops should be allowed to grow up to a height of 3 metres. When side shoots appear, four or five strong ones should be saved at different levels on the trunk above the 3m stake (to prevent forking). When the top leaders have grown fully they should be pruned moderately to cause them to branch out and produce a bushy top.

The tree-guard should be removed when the tree has been firmly established and there is no risk of molestation by goats or cattle.

c) Tree-guards may be made economically from thorns or bricks; old bitumen drums with holes punched in them could be used with advantage where the hot weather is not too intense, otherwise they retain heat and shrivel up the young plants.

1.5. Maintenance of Gardens in Offices, Rest Houses and Colonies-

(a) The responsibility of maintaining hedges, lawns and shrubberies attached to offices, rest houses and playgrounds and in colonies in a satisfactory condition devolves on the garden staff attached to the division/ district. Where such gardens are small, the watchman should maintain them in a satisfactory state.

b) The Sr. Section Engineer (Works) should pay requisite attention to the cleanliness of rest house compounds and upkeep of gardens.

Shrubs and seedlings should be obtained when required from the divisional/ district nursery.

The periodicity of inspection of building and gardens shall be as per **Annexure 6.1.**

2. GARDENS IN OFFICERS' BUNGALOWS AND SENIOR SUPERVISORS' QUARTERS:-

2.1 Maintenance-

Railway premises occupied by Officers and Senior Supervisors should be kept in a neat and tidy condition. Gardens within compounds should be maintained to a satisfactory standard.

2.2 Incidence of Service-

Where hedges and lawns in bungalows are maintained by the railway, the incidence of service should generally be as follows, with variations as necessitated by climatic conditions being allowed for:-

(i) Hedges:

Hedge cutting	:	Once in 2 months
Watering	:	Once a week till the hedges are fully grown and then once in 2 months

(ii) Lawns:

Mowing	:	Once a month
Watering	:	Once a fortnight and once a week in summer
Weeding	:	Once a month

2.3. Provision of Lawns and Hedges in New Bungalows-

The following schedule of plantations may be adopted as a guideline:-

	Officers' Bungalows	Type IV Quarters
Lawn	200 sq.m	75 sq.m
Hedge	200 m	100 m

The cost of initial plantation should be borne by the railway against approved estimate

3. FELLING OF TREES:-

3.1 Felling of trees obstructing view-

(a) Trees and bushes that interfere or tend to interfere with the view from a train, of signals or level crossings or along the insides of curves, shall be cut. When cut, it should be ensured that they do not foul the track.

It is however desirable that as many trees as possible be retained, consistent with ensuring the safety of trains. Relaxations in distance from track are left to the discretion of the Assistant Divisional Engineer who will satisfy himself that no risk of trees falling across the line is taken. The following are among the relaxations:

(i) Trees may be reduced in height by lopping the top branches to obviate danger of obstruction.

(ii) Branches on the track side may only be removed, leaving those on the side remote from the track, thus rendering it impossible for the tree to fall across the track.

(b)When a group of trees is to be felled, each tree should be carefully marked, identified, classified and measured. Tenders may be invited for the felling and purchase of timber of such lots of trees, stipulating a time limit for the felling and removal from railway land of each lot. When inviting tenders, the classification and size of trees need not be quoted, the tender being in respect of a certain number of marked trees only, at the specified kilometrage.

(c) Joint Survey : Annually, joint survey of the trees should be carried out by Junior Scale Officers of Engineering, S & T, Electrical Department etc. and trees which are likely to endanger safety of track should be identified and felled / lopped as may be considered necessary. A report should be sent to the Divisional Engineer and Divisional Safety Officer.

3.2 Felling Outside Railway Limits-

When trees and bushes which interfere with the view of signals or level crossings are on private land, steps to clear the obstructions should be taken as laid down in section 14 of the Indian Railways Act 1989.

3.3 Felling in Compound of Staff Quarters-

Trees in compounds of railway bungalows or staff quarters should not be felled nor any branches lopped except with the permission of the Assistant Divisional Engineer.

3.4 Felling Near Electrical or Telegraph Wires-

Trees in close proximity to electrical or communication lines should not be cut nor the branches lopped except in the presence of staff of the Electrical or S&T Department as the case may be.

3.5 Survey of Surviving Trees - Every year a survey of surviving trees should be made for that year and information should be furnished in the proforma as detailed below:

Location of trees	Type of Trees	No of trees more than 50 cm girth	Trees from 15cm to 50cm girth	Saplings needing protection	Total	Remarks
I	II	III	IV	V	VI	VII

The above information should be collected and entered in a tree register maintained for this purpose by Sr. Section Engineer (Works /P.Way) in-charge.

The information with regard to number of trees planted, cut and perished have to be maintained in another Register. Consolidated information is required to be sent to the Railway Board by 30th April, every year.

3.6 Harvesting of Matured Trees-

The Railways undertake extensive plantation of trees on their land every year.

Besides increasing the green cover over the land, with all its attendant benefits, this is also a source for earning revenue when these trees reach maturity.

Planting of tree saplings and harvesting of matured trees should be a continuous process with the number of tree saplings planted on the Railway exceeding the target set by the Board for this purpose. This figure should also be at least double of the number of matured trees harvested on the Railway.

As per the Forest Research Institute, Dehradun, a matured tree, in commercial terms, is one which has reached an age where it gives the maximum economical outturn of timber. This shall be dependent on the specie of tree expected to be harvested.

Vigorous efforts are expected to be made to harvest the matured trees so as to earn the maximum revenue for the Railway from this source.

3.7 Maintenance by Private Parties-

Where the private parties are willing to maintain the gardens, the railway may accept such proposals, judiciously deciding the terms and conditions.

4. Training of Staff-

The malis and supervisors should be trained using facilities available with state government institutions or elsewhere.

CHAPTER 7

COMPLAINT CENTRES

At present on most of the Zonal/Production units complaints are being lodged at SSE/JE (Works/Horticulture/Sanitation) office in-charge of the colony/ Engg. assets through railway phone or physically during the office hours only. SSE/JE (Works/Horticulture/Sanitation) accordingly distributes the artisan staff for attending the complaints who could be departmental or engaged through an outsourcing agency. The complaints are allotted in daily diary with details of complaint and handed over to the worker concerned for getting the needed materials issued from the Service Centre Store and attending to the complaint. After attending the complaint, artisan staff take signature of the resident and inform the SSE/JE (Works/Horticulture/Sanitation). There is no proper feedback system in present system.

1. Online Maintenance Service (Railway Web Based Service Centres):-

The web based complaint management system is now started by some of the zonal railways / production units. In this system, a complaint management portal is created on zonal railway/ production unit local area network (LAN). This system is more transparent. It is web based program used for on-line Registration and disposal of complaints for the residential quarters and offices.

1.1 Residents' Module:

Under this module, an occupant can lodge one's complaint in respect of residential or nonresidential buildings by directly logging into Railway Web Based Complaint Management. The type of complaints (i.e. Residential or Non-residential) can be selected after log-into Railway Web Based Complaint Management website from the drop down menu .

The complainants using Railway Web Based Complaint Management can select a residential quarter or non-residential building through multiple options e.g. house details, service centre, building name, general search or one's own mobile number. The complainants can choose any of the above options as per their convenience. The resident can also view the detailed list of complaint types in respect of Civil, Sanitation and Horticulture. Against a specific complaint lodged, the resident may be allowed to choose their preferred day and time for complaint attendance. Upon submission of needed details, the confirmation screen appears with the UNIQUE Complaint Number, which is Auto-Generated by the system.

The status of a previously lodged complaint can also be known online through multiple options e.g. direct by giving complaint number or by selecting particulars of building/quarter and then the specific pending complaint. The residents can also get the complaint history in respect of their particular quarter during a specified period.

The email are generated and sent to the registered email of the user immediately after the complaint is lodged. When the complaint is attended, the user may be given the option to submit their feedback. Once the complaint gets attended by the respective SSE/JE (Works/Horticulture/Sanitation), the resident may be asked to give feedback in three different modes as under:

A. Satisfied with the work done;
B. Not satisfied with the work done; and
C. Attended but claimed to be not attended by the Allottee.

If not satisfied with complaint compliance, the user may be given option to re-activate the complaint. Against a re-activated complaint, the worker is required to re-visit and attend the complaint to the satisfaction of user.

1.2 Complaint Centre Module:

This module is created for looking after the complaints handled at the operational level i.e. Junior Engineer/Senior Section Engineer office. Each service centre is owned by Junior Engineer/Senior Section Engineer and he has been allotted a Login ID and Password and when logged-in, it shows online numerical abstract of registered complaints assigned and remaining to be assigned to workers for that Service Centre. This is displayed to all JEs/SSEs (i.e. Civil, Sanitation & Horticulture) in regard to all complaints under that Service Centre. The analysis for Bench marking can also be done for the complaints lodges for selected period.

1.3 24x7 Complaint Centre :

A complaint centre equipped with artisans and supervisors (i.e. Junior Engineer/Senior Section Engineer) may be opened for solving the complaints in other than office hours.

1.4 Requirements of on line complaint management module :

The web based complaint module shall cover the following features:

A) For Allottee / Complainant :

1. Complainant/Occupant can register his official/residential complaints through intranet website created by zonal railway without physically going to concerned maintenance office.

2. log in ID & Password may be created on complaint website after filling relevant Information on the webpage.

3. The nature of complaints may be divided in three parts i.e. Civil work, Sanitation and Horticulture work.

4. Under complaint type heading, Major type of repair/ replacement work may be included under head Civil work, Sanitation and Horticulture work. Other options may also be given for the items which are not included under complaint type.

5. Against a specific complaint lodged, the resident may be allowed to choose their preferred day and time for complaint attendance (if possible).

6. Upon submission of needed details, the confirmation screen shall appear with the UNIQUE Complaint Number, which is Auto-Generated by the system.

7. Provision of feedback through SMS shall be included as an option, which shall be sent to the registered mobile of the user at various stages namely at the time of lodging of complaint and then assigning of complaint to the worker and when the complaint is attended.

8. The user has also been given the option to submit their feedback via SMS also. Once the complaint gets attended by the respective service centre. The resident is asked to give feedback in three different modes as under:
   A. Satisfied with the work done;
   B. Not satisfied with the work done; and
   C. Attended but claimed to be not attended by the Allottee.

   This feedback is taken automatically through an SMS responded by complainant in response to SMS reporting complaint compliance. If not satisfied with complaint compliance, complainant has option to re-activate the complaint thru service Centre. Against a re-activated complaint, the worker is required to re-visit and attend the complaint to the satisfaction of user.

B) For Service Centre In charge:

1. Each service centre is owned by Junior / Sr. Section Engineer and he has been allotted a login ID and Password and when logged-in, it shows online numerical abstract of registered complaints assigned and remaining to be assigned to workers for that Service Centre.

2. This is displayed to Junior / Sr. Section Engineer of all service centers i.e. Civil work, Sanitation and Horticulture work in regard to all complaints under that Service Centre.

3. Wherever online service is not yet activated and / or where complaints are directly received, these are required to be entered online at the designated service centre. For this purpose, Data Entry Menu is used by Service Centers. There should be a provision of lodging single or multiple complaints in the system.

4. Updation of Complaints

   Soon after the complaint is registered, worker is assigned and complaint is reported as attended. Online updating is done on REALTIME basis by Junior / Sr. Section Engineer for one's own discipline (i.e. Civil work, Sanitation and Horticulture work) . This is done by selecting the various options like:
   (a) Assign Complaints;
   (b) Attend Complaints;
   (c) Convert Complaint to :
   • Disowned by Allottee;
   • Major Complaint;
   • Non-Concerned Complaint;
   • Door Found Locked-1;
   • Door Found Locked-2;
   • Door Found Locked-3;
   • Not Admissible Complaint; and
   • Periodic/Upgradation Complaint,

   Non-updation of status on a REALTIME basis would result in reflection of inactive and non-responsive disposal of Complaints on the website resulting in flood of queries from the Residents and reviewing officials.

C) For Reviewing Officers:

1. login ID and Password shall be provided to ADEN/Sr. Scale/J.A. Grade/S.A. Grade officials for observing the complain status at any time by login into the webpage. For better and effectively monitoring of complain status, an escalation report may be sent to higher authorities in .pdf format.

2. AEN/DEN should receive mail on every specified weekday (say Monday & Thursday) regarding more than 3 days pending complaints.

3. Sr.DEN should receive mail on a specified week day (say every Monday) regarding more than 7 days pending complaints.

4. CE/work should receive mail every fortnight regarding more than 15 days pending complaints.

5. Long term complaints will be emailed once every month to all concerned officers.

6. Following feature shall be incorporated in complaint module for effective monitoring :

A. MIS (Management Information System) Reports

Service Centre has been empowered for its own jurisdiction through the online complaint system to generate MIS reports in different formats for monitoring and taking corrective actions by the Junior / Sr. Section Engineer concerned. These MIS reports include:

(a) Reports Related to complaints
(i) Lodged, pending & disposed off
• On a particular day
• During a specific period
(ii) Pending for more than specified number of days,
(iii) Numerical abstract
(iv) Status Report

(b) Residents' Feedback Reports categorizing as:
(i) Satisfied with the work done
(ii) Not Satisfied with the work done;
(iii) Attended but claimed to be not attended by the Allottee; and
(iv) Delay in assigning

(c) Reports Related to Workers

(i) Assignment, pendency and disposal of complaints.

(ii) Attendance Report for a specified period.

(iii) Attended but reported by user as unattended.

(d) List of houses

(i) Repeatedly lodging same complaints beyond a specified number of repetitions.

(ii) Vacated, occupied during a specified period

(iii) With period of vacation/ occupation history

(iv) Occupation/ vacation report. Duplicate, if needed, at any time

(e) Non Concerned complaints identified helps in analyzing the number of complaints received which do not pertain to Civil/Horticulture/sanitation out of the total complaints received.

2. Disposal of Dismantled Material :

Dismantled material should not be allowed to be accumulated in large quantity or for long period. Dismantled material when stored for longer duration gets deteriorated and loses its worth. Thus, in addition to blockage of space it causes revenue loss to the Government by way of less realization of sale proceeds of the dismantled material. Also it gives unsightly look as the dismantled material is seen scattered in the compound of Service Centre.

It is the responsibility of Assistant Engineer that Survey Reports of the dismantled material are sent to competent authority periodically to ensure its proper disposal.

CHAPTER 8

GENERAL INSTRUCTIONS REGARDING COLONY, BUILDINGS AND STRUCTURES

1.0 Plinth Area for Various Types of Quarters – The Plinth area to be adopted for various types of quarters is indicated in **Annexure 8.1** based on the Ministry of Works and Housing Memorandum dated 14.08.1975. The Railways may adopt their own economical type design for each category of quarters keeping in mind the economics in construction. The designs followed by Local bodies, Housing Boards, etc. will bring out the most economical local designs which could be referred for guidance.

2.0 Basic amenities in Staff Quarters: All staff quarters should be provided with the following basic amenities:-

a) Kitchen
b) Individual bath room
c) Individual sanitized latrines
d) Basic ventilation arrangements.

The above amenities may be provided on a programmed basis wherever these are not available.

3.0 Scale of Amenities –

The following standards should be generally observed unless otherwise directed by the Principal Chief Engineer & as per **Annexure 8.3**.

3.1 Hospitals and Dispensaries:

The amenities to be provided for Service buildings / Hospital and Dispensaries shall be as given in **Annexure 8.2**

4.0 Use of New Materials: New materials available in market may be used if found suitable from the consideration of cost, local condition and aesthetic with the approval of concerned SAG Officer.

5.0 Provision of Chicks and Venetian Blinds –

Chicks or Venetian blinds as considered appropriate may, if considered necessary, be provided to the following buildings, preferably on the West and South sides:-

a) Hospitals
b) Rest Houses

c) Running Rooms
d) Offices at Railway Headquarters

These should be arranged by respective departments. In exceptional localities where shade temperatures are high or in buildings close to public thoroughfare, special sanction for provision of chicks or Venetian blinds may be applied for.

6.0 Block Numbering of Buildings and Structures-

Every building or structure in a station yard, railway colony, and between stations should be numbered according to such instructions as may be issued by the Chief Engineer so as to facilitate reference in correspondence, the correct number being entered in the Building Register.

7.0 Building Registers-

Building registers in Divisional Engineer's Offices shall be maintained up-to-date and show complete details of each structure as per Para 1977 of the Indian Railways Code for Engg. Deptt. Replicas of these registers will be maintained in the Accounts Offices. The Senior Divisional Engineers should advise the Accounts Officers of the construction of new structures and alterations or additions to existing structures and the costs thereof, as and when carried out.

8.0 Transfer of building-

8.1 Each Department is responsible for the allotment of staff quarters under its control, preference being given to essential staff. The transfer of vacant staff quarters from one department to another should not be effected unless approved by the Housing or Quarters Committee.

8.2 In the case of transfer of staff quarters from one department to another, the department concerned will carry out the transfer in the presence of Senior Section Engineer (Works) by giving due notice to the Assistant Engineer. The Senior Section Engineer (works) shall make out a handing over /taking over memo, listing out the details of deficiencies noticed and get it signed by the occupant. This memo will be forwarded to Divisional Engineer through Assistant Divisional Engineer after duly pricing the damages, if any, to enable the department concerned to recover the cost of damage attributable to the occupant.

8.3 In the case of occupation of quarters by a new occupant, the Senior Section Engineer (Works) will be contacted by the allottee with the allotment order for obtaining the key of the quarters. The Senior Section Engineer (Works) will prepare a handing over memo listing out the fittings and deficiencies and get it signed by the

occupant. One copy of the Memo will be submitted to the Divisional Engineer through the Assistant Divisional Engineer. One copy will be given to the occupant; one page will be earmarked for each residential quarter to record details of occupancy. Signature of the occupants will be obtained on this register, whenever there is a change of occupancy. The proforma for this register is given **Annexure 8.4**.

8.4 In the case of new service buildings, the Assistant Divisional Engineer will fix a date for handing over of the building for use to the department concerned, who will arrange for their representative to be present for inspection and taking over of the building. The Sr. Section Engineer (Works) shall be deputed to represent the Engineering Department for handing over.

8.5 In the case of buildings constructed by the Construction Organization, the Open Line will take over the same after joint inspection at the level of Assistant Divisional Engineers. The Open line Assistant Divisional Engineer will allot a number to the building and enter the details of the building in the Building Register duly intimating all concerned.

9.0 Responsibility of Staff Occupying Quarters-

9.1 All staffs are under obligation to keep their quarters and compounds in a clean and tidy state and to obey all sanitary rules that are in force.

Before occupying railway quarters, the occupant should satisfy himself of their condition and sign the prescribed form.

9.2 Cooking except in kitchens or places specially provided is forbidden.

9.3 The occupant is responsible for notifying the vacation of his quarter and for giving reasonable notice to the Works, Electrical and Telecom staff for inspecting it in his presence. The Works and Electrical Supervisor in-charge should inspect the quarter and submit an estimate of damages attributable to the occupant to enable the department concerned to recover the cost. If there is an interval of time from date of vacation of quarters to next occupation, the Sr. Section Engineer (Works) should make necessary arrangements for its safe custody. It is the responsibility of the Engineering staff or Special staff where appointed to see that the occupants adhere to the instructions laid down. Any breach of instruction should be reported to the occupant's immediate superior.

10.0 Vacant Railway Buildings-

10.1 As far as possible, no railway quarters should be allowed to remain unoccupied. The Sr. Section Engineer (Works) should send a return on buildings lying vacant at the end of every month through the Assistant Divisional Engineer to the Divisional Engineer who will take necessary steps in regard to their occupation.

10.2 A return of vacant buildings should be sent by the Divisional Engineer's Office to the Accounts Department /allotment authority at the end of every month.

11.0 Taking over of building after completion-

11.1 Buildings along with their services are designed and constructed to meet specific user requirement. In order to ensure full user satisfaction, it is necessary that the buildings and services on their completion should be subjected to intensive review before taking over of the building/structures from contractor. The Construction /Open Line Engineers should formally take over the building from the contractor.

11.2 The railway contracts generally provide for obligatory maintenance by the original contractor in the initial stages for a period of three to six months by different Zonal Railways, depending upon the nature of the work. Immediately after completion of any assets there are bound to be certain teething troubles in any new construction. If these are attended to at initial stage itself, the maintenance pressure will be reduced. Where there are inherent defects both in design and construction, the maintenance cost rises disproportionately to a higher level and the anticipated life of building is reduced.

A proforma cum Checklist for checking the items before taking it over and giving completion certificate to the contractor shall be as per **Annexure 8.5.** The same procedure to follow after maintenance period.

12.0 Construction and Dismantling of Building/Structures-

12.1 When constructing new structures/ buildings or making deep excavations, in addition to Building/structural plans, detailed scheme of erection of form work/ supporting arrangements should be made. When dismantling of any existing structure is involved to facilitate construction, the scheme for dismantling of the existing structure shall also be shown in plans. In contractual work, special tender conditions should be provided to cover above.

12.2 (a) The dismantling of structure should be done under proper supervision and as per approved scheme of dismantling.

(b) At major dismantling sites minimum level of supervision shall be Senior Section Engineer (In-charge), who should be nominated by Dy. Chief Engineer/Sr. DEN in writing.

(c) The dismantling Plan should be scrutinized by the Drawing Office and approved by Sr. Divl. Engineer in case of Open Line Organization or H.O.D. in case of Construction Organization. The dismantling plan should invariably show various stages of dismantling, equipments to be used for dismantling, area likely to be affected by debris, any adjacent buildings likely to be affected and action to be taken thereof.

(d) Proper barricading should be done to stop access of unauthorized personnel near the dismantling area. Wherever necessary, assistance of RPF should be taken to prevent people from coming close to dismantling area. Signages warning people not to enter the danger zone should also be displayed.

e) Proper announcement through Public Address System should be done at regular intervals to keep the onlookers away from the major dismantling affected zone.

f) The adjacent buildings likely to be affected by dismantling should also be evacuated.

g) In area where law and order is likely to be affected, assistance of local Police should be taken to keep people away from dismantling area.

CHAPTER 9
ANNUAL ACTION PLAN AND RATE CONTRACT SYSTEM

1.0 Annual Building Survey and Program for Repairs-

Before the calendar year is completed a survey of the buildings borne on the Register of Buildings or otherwise maintained from obtained through the demand of grants of our Ministry of Railway, should be conducted to identify all works of repairs, minor works and up gradation works required or anticipated. The Report of the Assistant Divisional Engineer on the Annual Survey of the buildings should highlight defects of structural nature in the buildings which require personal investigation of the Divisional Engineer.

Special repairs required to eliminate leakage and dampness in buildings should be given priority and completed before the monsoon. As far as possible it should be ensured that all other repair works both Civil and Electrical are completed before finishing works are taken up. For this the Assistant Divisional Engineer of both the streams shall submit a time frame of the repairs, minor works and up-gradation works required or anticipated to the Divisional Engineer in charge of the Service Centre, who shall be responsible for circulation of a coordinated time frame for carrying out the repairs by 31st January for the ensuing financial year.

2.0 Annual Action Plan-

Wherever the sum of the maintenance expenditure by a subdivision through funds obtained from the detailed demand of grants of the Ministry under all heads of Ordinary Repairs, Special Repairs, Minor Works, Maintenance and Repairs and Up gradation exceeds his powers to issue, the Assistant Divisional Engineer shall, under intimation to the counterpart Assistant Divisional Engineer level officers of other disciplines, take action to forward by 15st December proposal for an Annual Action Plan for the ensuing financial year. These officers of the other disciplines shall similarly forward their Annual Action Plan to their superiors.

The Annual Work Program of the Annual Action Plan, indicating the activities of all disciplines may be approved by Sr Divisional Engineer who is in charge of the Service Centre except where the divisions are situated more than distance away from the Division Office, in which case it may be approved by the Divisional Engineer in charge of the Service Centre. The Annual Work Program may be circulated to all officers from JE to CE for the division of each discipline. The Annual Action Plan of all disciplines, shall thus have the same Annual Work Program.

The Annual Action Plan, which shall be based on the Survey, the Major Complaints pending as well as on past experience and anticipation, shall include, indicating quarter/ building / block wise detail of work to be carried out, the following:

1. Extract of works through contracts contemplated in the
   (a) Estimate for Annual Repairs
   (b) Estimate for Special Repairs (including Extraordinary Repairs)
   (c) Estimate for Maintenance and Repairs
2. List of Up-gradation works and Minor works to be carried out.
3. An Annual Work Program giving start and completion of each of the above jobs and activities
4. A Time Frame for invitation of tenders and award of work and completion thereof.

The Division Engineers shall ensure that all the estimates within competence of division are sanctioned by 15th January and where approval of higher authority(s) is required, the proposals are forwarded by 5th January so that these are also sanctioned by 15th January. Approved Annual Work Programs of each discipline may be forwarded to the authority competent to approve the same by 15th January.

Action for call of tenders and award of work or supply may be taken in time so as to start at the beginning of the year i.e. 1st April. Tenders may not be invited for amount more than 80% of the allocation of the current year or of the estimated amount whichever is lower.

The Annual Action Plan may be reviewed before 30th September and if necessary a revised Plan may be approved and additional tenders etc. may be invited.

3.0 Annual Rate Contract System-

The Annual Rate Contract System is suited to Maintenance Operations as it better meets the following objectives:

(i) Minimises time-gap between demand and start of work
(ii) Avoids Tentative tendering on arbitrary schedules of quantities and thereby
(iii) Minimises Deviations and misuse thereof
(iv) Obviates irrational variation of rates
(v) Avoid Multiplicity of Agencies for a job

It also achieves following benefits

(i) Obviates repeated tendering, Multiple contracts
(ii) Free staff time to be available for inspection and supervision
(iii) Reduces dependence on a single Contractor

CHAPTER 10

ENCROACHMENTS

1.0 Verification of Land Boundaries and Encroachments-

a) Vide para 1048 of the Indian Railway Code for the Engg. Deptt. (1999 Edition) every Zonal Railway Administration is responsible for the demarcation and periodical verification of the boundaries and maintenance of proper records in connection with land in the possession of that Railway.

b) The Sr. Section Engineer (Works/P.Way) is responsible for maintaining railway land within the jurisdictions defined in paras hereinafter, without any encroachments or development of easement rights. He should prevent and remove encroachments, as and when they arise and where removal of encroachment is possible without taking recourse to PPE act. Particular care is required to prevent encroachment on railway land situated above tunnels and below bridges especially Road over/Under bridges. In cases where the Sr. Section Engineer (Works/P. Way), Station Master, Chief Goods Clerk, Carriage & Wagon Inspector, RPF Inspector, and other concerned Inspectors are not able to remove the encroachments on railway land within their respective areas of responsibility as defined in para 815 hereinafter, they should report the case to the Assistant Divisional Engineer / Divisional Engineer / Divisional Commercial Manager / Senior Divisional Engineer / Senior Divisional Commercial Manager and concerned Departmental officer in charge (in case of workshop/sheds) / Divisional Security Commissioner as well as the Superintendent of Police / Divisional Commissioner, and other Civil authorities verbally as well as in writing for further action.

c) The Sr. Section Engineer (P.Way) shall inspect and maintain the Railway Land boundaries between stations i.e at other than station limit. The Sr. Section Engineer (Works) shall inspect and maintain the land boundaries at stations (within station limit), in staff colonies and all Installations & locations.

d) **Maintenance of land boundaries verification Register-**

Railways should maintain printed registers on the lines of Bridge Registers as at **Annexure 10.1 (a) & (b)** in the attached format showing “Details of Encroachments” and “Details of the Missing Boundary Stones” and action taken thereon. The entries in the register should be certified by the Section Engineer/(Works/P.Way) of the respective sections and verified/inspected by the Asstt. Divisional

Engineer./DEN/Sr.DEN or other higher officers from time to time. The registers should have adequate pages so that record of inspection and verification of land boundaries for a period of 15 years can be accommodated in the register. Separate registers should be maintained for each Sr. Section Engineer (Works/P.Way)'s jurisdiction.

A certificate on the following proforma should be given by the Sr. Section Engineer once a year which is to be verified and counter-signed by ADEN with regard to correct demarcation of land boundaries.

Certificate for Land Boundaries verification is given below:

Land Boundaries Verification Certificate

Year ---------- Section---------- Kms. ---------- to----------
Sr. Section Engineer (P. way/Works) ---------- Sub Division---------- Division---- ----------

---

I, ----------Sr. Section Engineer (P.Way/Works) certify that I have inspected the railway land fencings and boundary stones on my section during the year ending ----------and that they are in accordance with certified the/land plans. There have been no encroachments except at the following kilometerages that have been reported upon vide reference given against each.

Details of encroachments

Station premises/ colony/ mid section	Location		Rly employee/ Outsiders persons/ others	Soft/ hard	Area in sqm	Value of land approx.		Approx. Period since encroachment existing	Purpose :Personal/ Commercial/ Religious/ Social/ other	Action taken to remove	Remarks
	KM/ Station	Reference to encroac				Value	Basic market rate/				

	(from-to)	hment plan					notified rate/ Rough assessment				
1	2	3	4	5	6	7	8	9	10	11	12

I further certify that wire fencing and/or boundary stones are available at all locations except at the Kilometerages shown below for which action to replace the same is indicated against each location.

Details of missing boundary stones

Date of inspection	**Location**	**Description of missing boundary stones**		**Action taken**	**Initials of inspecting Officers**	**Remarks**
		Km	**Boundary stone No.**			
1	**2**	**3**	**4**	**5**	**6**	**7**

1. I certify that railway boundaries are demarcated correctly and that there are no encroachments, except those listed above.

2. Certified that land plans pertaining to the above mentioned SSE (P. Way)/SSE (Works) ----------are available with him except the following.

_____

Asstt. Divisional Engineer/

_____

DEN/Sr. DEN/

_____

Chief Engineer/General

e) During his inspections, the Assistant Divisional Engineer should ensure that Railway boundaries are demarcated correctly and that there are no encroachments. In cases where he cannot prevail on the parties to remove the encroachments, he must report the facts with particulars to the Divisional Engineer who will take up the matter with local authorities.

2.0 Prevention and Removal of Encroachments –

a) New encroachments shall be got removed promptly under provisions of section 147 of Railway Act 1989. For old encroachments where party is not amenable to persuasion for removal of such encroachments, action should be taken under the provisions of Public Premises (Eviction of Unauthorized Occupants) Act 1971. Encroachment of railway land by railway staff also constitutes grave misconduct on their part and is 'good and sufficient reason' for imposition of major penalty after following the procedure laid down in the Discipline and Appeal Rules.

b) When an encroachment is in the process of building up, it should be removed then and there. In case the new encroachment is sought to be built by force, the Sr. Section Engineer will immediately contact his ADEN and DEN, the Security Officers (RPF) of the Railway, the Civil and Police officers of the District (directly or through ADEN/DEN) in writing as well as by personal contacts without loss of time to ensure that the new encroachment is not allowed to come. The Station Master, Chief Goods Clerk, RPF Inspector, and other Section Engineers also will be equally responsible for taking similar action in their areas of responsibility as per para 815 of the Manual. Headquarters Office should also be contacted without loss of time if necessary.

The Sr. Section Engineer (P.Way/Works)/Section Engineers of Workshop concerned/Station Master/Chief Goods Clerk will call on the gang men, khalasis to dismantle and remove the encroachment as soon as noticed. If during such process of removal of the encroachment the official(s) as stated above is (are) threatened, an FIR should be lodged with the RPF and simultaneously assistance of RPF Inspector be sought. The RPF Inspector will provide the manpower and other required assistance to the officials for immediate removal of the encroachments, and simultaneously lodge FIR with GRP, Civil Police as the case may be.

Senior officers of the Divisions as mentioned above should guide the subordinate officials in doing their best to deal with the situation. Simultaneously, if the ground situation so requires the senior officers should contact their counterparts of similar rank/authority in the Civil and Police Departments of the State Govt. and seek their help to deal with the situation. The senior officers of the Division should also contact

the concerned officers in the Headquarters and seek their intervention in the matter as necessary.

The officers in the Headquarters should contact their counterparts in the Civil and Police Depts. of the State Govt. and request that required civil assistance be made available by them to the Railway officials.

As specified above, a well-coordinated effort should be made by officers/officials of different capacities and jurisdiction to achieve the ultimate objective that the encroachments are removed/dismantled within the shortest possible time.

c) Where the encroachments are of a temporary nature in the shape of jhuggies, jhopries and squatters and where it may be difficult to take action under PPE Act the same may be got removed in consultation and with the assistance of local civil authorities.

d) Every year, at the close of financial year, detailed survey of encroachments must be made under the following categories:-

i) CATEGORY - A) Encroachments by outsiders removal of which requires action under Public Premises Eviction (PPE) Act.

ii) CATEGORY - B) Encroachments by outsiders which do not require action under PPE Act (e.g. temporary occupation of land by hawkers, using Railway land for cattle, cow dung, refuse etc.)

iii) CATEGORY- C) Encroachment by Railway staff in the form of temporary huts etc.

iv) CATEGORY - D) Encroachment by Railway staff who have been allotted railway accommodation, by way of additions to the structures, unauthorized use of land for cultivation etc.

Note: Category “A” encroachment is of the hard type and Category “B”, “C” & “D” encroachments are of the soft types.

e) The Sr. Section Engineer (Works/P.Way) should maintain details of encroachments in a register showing their incidence and removal with necessary details as given in **Annexure 10.2** (Encroachment Inspection Register).

One page of this register shall be allotted to each encroachment. A scale plan of the encroachment shall be provided on the facing side.

Once a case is opened the entries should not be discontinued unless and until the encroachment is removed. A note to that effect should be made in the register. ***The frequency of inspection of encroachment shall be at least once in 3 months.***

Sr. Section Engineer (Works/P.Way) shall give a certificate in the following proforma, once in three months which shall be verified and countersigned by the ADEN.

"I....., Sr. Section Engineer (Works/P.Way) certify that I have inspected the Railway land in my section during the quarter ending .....and there have been no encroachments except at the locations shown in this register, that have been reported upon vide references given against each."

sd/-
Sr. Section Engineer (Works/P.Way)

ADEN should submit every month the summary of the status of removal of encroachments to the Divisional Engineer.

Monthly progress regarding additions and removal of encroachments, filing eviction cases and their progress in court of Estate Officer, in Civil Courts etc. should be submitted by Divisions to Head Quarter.

Encroachment plans to scale shall be made for every encroachment. These encroachment plans along with details of encroachment as per **Annexure 10.2** should be checked and signed by Sr. Section Engineer (Works/P.way)/ADEN. Records of such encroachment plans should be kept in the Divisional office and these encroachment plans should be handed over and taken over by Sr. Section Engineer (Works/P.way)/ADENs at the time of change of charge.

A copy of encroachment plan should be available with Sr. Section Engineer (Works/P.way) /ADEN/DEN/Sr.DEN. Any encroachment added or removed should be reflected in the encroachment plan.

A copy of encroachment plan should he handed over by the Sr. Section Engineer (Works/P.Way) to SMs/ RPF Inspectors/Workshops Supervisors in charge etc.

(f) Steps to control the unauthorized use of Railway land:

Following further steps should be adopted to control the unauthorized use of railway land:-

(i) For any addition/alteration of a pucca structure, written sanction of the Divisional Engineer should be necessary. Any structure in which cement is used may be classified as pucca structure.

(ii) For alteration /addition of any temporary structure, written sanction of ADEN should be necessary.

(iii) Plans for commercial plots at various stations should be approved jointly by Divl. Engineering and Commercial Officers and at site demarcation of the plots should be done with rail posts by Engineering Deptt. Whenever any commercial plot is licensed the Commercial Department should give a copy of the allotment letter to the Engineering Deptt. so that Sr. Section Engineer (Works) can ensure against any unauthorized use. The Station Master should also have a copy of the approved plan of commercial plots at the Station. Station staff, including Commercial staff posted in Goods Sheds should firstly ensure that commercial plots are not misused and secondly, in case of any misuse and/or encroachment should immediately report it to the Engineering Deptt. for eviction and other action that may be necessary. This will also apply to the cases of any licensing for shops, tehbazari etc. in the circulating area and goods shed premises.

(iv) To prevent imminent encroachments on vacant railway land, planting of suitable trees/ shurbs including quick growing thorny trees like Prosopis Juliflora (Vilayati Babul) should be adopted.

(g) Eviction process shall include inter alia:-

(i) Identification of the existing encroachments.

(ii) Ensuring that all the cases under the PPE Act have been filed.

(iii) Estate Officers should expedite finalization of the cases pending with them.

(iv) Action for possession in accordance with the extant orders where eviction orders are received.

(v) Mobilization of help of Civil Authorities by formal/informal requests at different levels till the required assistance is forthcoming.

(vi) Cases directed to the courts to be pursued for early finalization with the help of the Railway Advocates.

3.0 Division of Responsibility –

The following division of responsibility between the station staff and the engineering staff should be observed in regard to encroachments within the station areas:

a) At stations, the Station Master, jointly with nominated/senior RPF Inspector, will be responsible for preventing encroachments and for driving out trespassers by obtaining help also from RPF, Police and Sr. Section Engineer (Works/P.Way) as necessary.

b) In the goods shed, the Chief Goods Clerk wherever available and at other places the Station Master, jointly with RPF inspector, will be responsible for preventing encroachments and for driving out trespassers also with the help of RPF/Police and Sr. Section Engineer (Works/P.way) as necessary.

c) The responsibility for preventing encroachments and for driving out trespassers in circulating areas of the stations and goods sheds will rest with the 'Station Manager/Station Master/SS/CGC for their respective areas. They can take the assistance from Engineering and RPF staff, as may be found necessary.

d) Whenever an encroachment incipient or otherwise is noticed in the station area, the Station Master/Chief Goods Clerk should take immediate action to have it removed. Assistance from the RPF/Police and Engineering staff should be taken as necessary.

e) At station, where Section Engg. (Works) is not posted, but Inspector/RPF is there, then the Inspector/RPF is responsible for checking fresh encroachments.

f) In case of loco sheds/workshops, concerned (nominated) departmental supervisor (e.g. Sr. Section Engineer (C&W) for coach manufacture depots etc.) along with RPF Inspector shall be jointly responsible.

g) While instructions contained in this para (a) to (d) would generally apply, it would be desirable to nominate Traffic, Commercial, Engineering officials as in-charges of

specified areas at medium and large sized stations to keep a watch on encroachments and take appropriate action for immediate removal.

h) Whenever encroachments are taken up under PPE Act, the concerned officials from Engineering (including workshops Supervisors), Commercial, Traffic or Security departments, as the case may be, would act as the Presenting Officer, and proactively help in expeditious finalization of the proceedings. Adequate training may be provided by IRICEN/Pune and in Railway Staff College, Vadodara to the Estate Officers to make them well conversant with the provisions of the PPE Act, 1971 and also various avenues available to them while dealing with cases of encroachments. Course contents may include case histories and various relevant court judgments on the appeals against the orders of Estate Officers.

i) RPF should play a proactive role in removal of soft encroachments as and when existence of such encroachments is brought to their notice. They should also provide assistance in co-operation with State Police/GRP where cases have been decided by the Estate Officers.

4.0 A. Action to be taken while handing/taking over of charge by Supervisors-

(a) A joint field check on the existing encroachments will be mandatory part of the Handing over/Taking over of the Section Engineer(Works/P. Way)s' charge. This should be followed by a joint signing at the end of the Encroachments Register on the number of encroachments in the jurisdiction. The fact that these steps have been completed should be an item required to be specifically mentioned in the Handing over Note of the outgoing Supervisor. Similar procedure should be followed by the concerned officials from Commercial, Traffic, Mechanical, Electrical, and Security departments.

(b) In the event of fresh encroachments having taken place being noticed at the stage of handing over of charge, and which were not specifically brought out in writing to the notice of the officers/authorities as specified in paragraph 814 (b) suitable adverse entries shall be made in the Confidential Records of the official(s) concerned, and he(they) will also be liable for DAR action.

4.0 B. Liability for D&AR action-

It is imperative on the part of concerned Branch officer that for any new encroachments that come up on railway land, officials responsible for safeguarding the railway land are taken up under Railway Servants(D&A) Rules.

5.0 Railway Land In Important Metropolitan & Commercial Cities-

In all such cities where the cost of land is very high, special staff including RPF should be deputed to deal with the encroachments and its removal. This batch of staff will be jointly responsible to ensure that no further encroachment of Railway land takes place. They will immediately remove the encroachments to avoid any development of the same. In case of non-removal, due to certain unavoidable reasons, they will lodge FIR with GRP/Civil police and report the encroachments with copy of encroachment plan, FIR etc.to the Divisional Engineer/Sr.Divisional Engineer who will initiate action for removal of encroachment and keep headquarters informed. Assistance of RPF should be enlisted when dealing with the Civil Police.

6.0 Maintenance of Rights of Way-

a) The Assistant Divisional Engineers and Section Engineers (Works) shall see that the rights of way across Railway land are not allowed to be infringed upon.Prompt action should be taken to prevent any person obtaining squatter's rights on railway property.

b) So as to assert the right of ownership as against any public claim of way, roads and authorized passage across Railway land over which the public have no right of way, should be closed for one day of 24 hours every year. This should be done during the date or dates approved, if necessary, by the local authorities. Necessary reports should be sent by the Senior Supervisors to their Assistant Divisional Engineers after the procedure is observed, with details of station yards and kilometrages. A notice of at least a fortnight should be given to the public of such closure. These notices may be fixed in some conspicuous place in the villages or towns where such passages exist, for the information of the public. In case of important roads such notices should be published in the local newspapers.

7.0 Religious Structures-

a) There is a total ban on licensing land for religious purposes. The Zonal Railways will ensure that no requests for further licensing of Railway land for religious purposes are entertained by them.

b) In regard to existing licenses for prayer platforms, shrines, temples, mosques, graves and tombs etc. on Railway land, the Assistant Divisional Engineers should maintain registers showing therein full particulars of the extent of each structure. The Religious Structures Registers should contain details of the locations, description of construction, extent of land on which the structures are located, history

of the structure, reference to plans, community by which it is regarded as sacred and with whom dealings should be made. The principles enunciated in para (a) should be complied and suitable control of Railways should be ensured through Agreement and Plans. The management should be by a committee consisting of railway employees.

The Senior Supervisors should keep a constant look-out for un-authorized extension of existing structures or construction of new structures and report such occurrences at once to the Assistant Divisional Engineer.

c) In case unauthorized extensions or new constructions are noticed, it should be possible for the Assistant Divisional Engineer and Staff to persuade those concerned, to desist from further construction. If required the Assistant Divisional Engineer should report immediately to the Divisional Engineer who will then ask the Department concerned to take requisite measures. When this stage is reached, the matter should be reported by the Divisional Engineer to the Chief Engineer. It would be desirable to inform District authorities about such instances promptly and impress upon them the need for removal of such additions to old structures or new constructions. In unavoidable circumstances, only individual cases may be referred to the Railway Board for regularization of the encroachments.

d) Licensing of the area or regularization of the religious structures may be limited to maximum of 500 sq. metre in each individual case.

e) Nominal license fee fixed for the purpose will be charged in respect of religious and welfare organizations, as decided by railway administration from time to time.

CHAPTER 11

PASSENGER AMENITIES, STATIONS AND YARDS

1.0 General:

As stations and their environs are the first point of contact between Railways and their customers, special importance is required to be given to the facilities provided to passengers in regard to their adequacy, quality and maintenance.

While planning for provision/ augmentation of stations, due consideration needs to be given to the importance of the station from point of view of passenger traffic.

2.0 Categorization of Stations:

(a) For the purpose of categorization of stations, the basic parameter is the passenger earnings of each station, from both reserved and unreserved passengers. The earnings are to be calculated on the basis of the number of passengers boarding at a particular station, irrespective of the location from where the ticket has been issued.

(b) Station have been categorized in seven categories namely A1, A,B,C,D,E& F depending upon annual passenger earning as per criteria prescribed by Railway Board from time to time **(2012/LM(PA)/3/5 dt.11/09/2012)**

(c) The categorization of station shall be reviewed every 5 year.

3.0 Minimum Essential Amenities (MEA):

(a) When a station is constructed, certain minimum amenities are required to be provided at each category of station (on the basis of projected passenger traffic/earnings). These are called **Minimum Essential Amenities (MEA).**

(b) The Norm for Minimum Essential Amenities required and quantum of the same at each category of station shall be as per Railway Board's instructions issued from time to time. In case amenities available at station are less than MEA but considered adequate, General Manager' approval may be taken **(Railway Board's letter No.2012/LM (PA)/3/5 dt.11/09/2012).**

(c) For the purpose of provision of MEA, the island platform should be treated as single platform.

4.0 Recommended Amenities:

Once the Minimum Essential Amenities are available at station, further augmentation should be considered at recommended level on need basis. The Norms for recommended level as issued by Railway Board from time to time are purely of recommended nature & not mandatory. Present norms are given in annexure IV of Railway Board's letter No.2012/LM(PA)/3/5 dt.11/09/2012.

5.0 Desirable Amenities:

Desirable amenities are those amenities which are considered desirable to further improve customer satisfaction and interface process at the station. The quantum of these amenities would depend upon the category of the station and as per Railway Board guidelines issued from time to time. Present norms are given in Railway Board's letter No.2012/LM(PA)/3/5 dt.11/09/2012.

6.0 Allocation of Expenditure:

Minimum Essential Amenities shall always be provided as a part of the concerned Plan Head at the time of construction of new Stations. Augmentation of any facility hereafter at station shall, however, be charged under Plan Head "Passenger and Other User Amenities".

7.0 Maintenance of Passenger Amenities:

a. It is desirable to have maintenance unit based at all A1, A & B category stations for prompt attention.

b. Station Master will arrange to display in his room the quantum of MEA required to be provided and amenities actually available.

c. Amenities provided at all the stations shall be maintained in good working order at all times. Maintenance staff shall carry out repairs needed immediately after receipt of information from the Station Master/Station Superintendant. However, Station Master should organize, through Imprest, expeditious repairs to small items of passenger amenities such as hand pumps/taps, water trolleys, clock,

light/fans, urinals/latrines and furniture at stations. (Railway Board's Circular No. 94/LMB/2/175 - dated 24.06.2003).

8.0 Review & Updating of the passenger amenities database in Division:

(a) The commercial department, being a nodal department for passenger amenities, will maintain & update complete data base of amenities available at stations in division in prescribed format every year on getting details of new amenities added from **station manager from time to time**. The database of passenger amenities shall be maintained on web based portal PAMS (Passenger Amenities Management System)

(b)The commercial department will also Review the requirement of additional facilities based on passenger earnings or importance of station & will propose them for sanction in Works Programme at appropriate time.

9.0 Booking Offices:

(a) The. Booking Windows may be distributed function wise or destination wise by the Commercial Department.

(b) The planning & layout of booking window should be as per plan provided by Commercial Department.

10.0 Waiting Halls:

(a) The area of waiting hall to be decided after considering the covered area available at booking office.

(b) Waiting Halls are meant for the paid passengers and hence should have entry from the platform side only.

(c) At suburban stations, extensions of platform shelter in lieu of construction of Waiting Hall may be done.

11.0 Platforms:

(a) **Length of Platforms:**

The length should be adequate to accommodate the longest train received at the station.

(b) **Width of Platforms:**

The width should be determined on the basis of the clearance specified in the Schedule of Dimensions. The platform widths should be adequate to permit a free unhampered movement of passengers.

(c) **Height of Platforms:**

The level of platform shall be as mentioned as Annexure 4.2 for various categories at the stations. The heights for various levels of platforms shall be as under:-

Level	B.G.	M.G.
Height above rail level for high passenger platforms	840mm maximum 760mm minimum	405mm above Rail Level
Maximum height above rail level for low passenger platform	455mm	305mm above Rail Level

(d) **Platform Surfaces:**

(i) The platform surface should be as per Guidelines issued by Railway Board from time to time. Present guidelines are given at Annexure 4.7.

(ii) In the case of single face platforms, the platform surface should have a slope of 1 in 60 away from the coping.

(iii) In the case of two face (island) platforms the platform surface should have a slope of 1 in 60 away from the centre of the platform up to the coping on either side.

(iv) The ends of the platforms should be provided with ramps at a slope not steeper than 1 in 6.

(v) A demarcation line should be drawn 1.8 m from the edge of platform. In the area so demarcated, trolleys shall not be allowed to enable free movement of passengers in that area.

(e) **Platform Fencing:**

All single face platforms should be provided with a suitable fencing or hedging (preferably Bougainvillea) of a height of 1.8m with a berm of at least 600 mm beyond the fencing or the hedging.

(f) Station Manager shall ensure regular cleaning/ washing of Platform as well as Platform lines

12.0 Shady Trees on platforms:

(a) The planting will be the responsibility of the Engineering Department. Station Manager shall ensure up keep and watering of plants at stations.

(b) The trees should be so planted that they do not obstruct the visibility of signals or infringe Schedule of Dimensions or infringe the overhead electric wires (Traction or General Service) or obscure the platform lights or signs.

(c) If the trees are already in existence, the positioning of the new equipment should be so adjusted as to avoid cutting of trees as distinct from trimming their branches.

(d) It would be advantageous to provide suitable raised masonry platforms around the fully grown trees as an additional seating accommodation for the passengers.

13.0 Lighting:

The provision & maintenance of lighting arrangement with their associated equipment for entire station area will be responsibility of Electrical department. However, where oil lamps are used for lighting, their provision, repair & maintenance will be responsibility of Operating deptt. The use of Solar Panel may be encouraged at stations where electricity is not available.

14.0 Drinking Water Supply:

(a) Where pipe water supply is available, potable drinking water should be supplied on platform by providing adequate number of taps at suitable locations. At smaller stations where pipe water supply is not available, minimum one hand pump should be provided.

(b) In addition, Commercial Department should arrange supply of potable drinking water through mobile or stationary container wherever desirable

15.0 Latrines, Urinals and Dustbins:

(a) Latrines and Urinals shall be provided as per scale laid down.

(b) Out of total no. of Latrines and Urinals as determined in manner indicated above, one third may be reserved for Ladies.

(c) All toilets should be gradually converted into Pay & Use system.

(d) The urinals may be suitably distributed on different platforms and waiting halls.

(e) Toilet should be provided near Station Master's office for easy maintenance at D & E category stations.

(f) All latrines and urinals should be sanitized. Water-borne sanitation shall be provided as far as practicable.

(g) An adequate no. of dustbins should be provided at the suitable locations on the platforms by Commercial Department.

(h) Station Manager shall ensure cleaning/ washing of latrines, urinals, Platform as well Platform lines.

16.0 Platform Covers:

(a) Depending on the climatic conditions, number of passengers and nature of traffic, Platform Covers should be provided as per scale laid down.

(b) Large-scale covering of platforms should be confined to

(i) Junction stations.
(ii) Stations at Civil District Headquarters.
(iii) Stations at cities and towns with a population of more than 1 lakh.
(iv) Stations in heavy rainfall areas.
(v) Suburban stations.

(c) The Platform Covers should be provided in terms of standard bays and the area under the Platform Covers may therefore marginally exceed the area required to be provided.

(d) Platform shelters should be extended up to the landings of the foot-over bridges. At small stations, platform shelters should be provided in front of the station building as far as possible. At locations where there is an uncovered space of platform between the shelter and the foot-over-bridge, as far as possible, a covered pathway should be provided to the foot-over-bridge.

(e) The platform covering should be as per Guidelines issued by Railway Board from time to time. Present guidelines are given at **Annexure 4.8** in IRWM.

17.0 Foot-Over-Bridges or Sub-ways:

(a) Foot-over-bridges or sub-ways as convenient and techno-economically feasible should be provided at station as per laid down scale.

Stations with high level platforms should normally be provided with foot- over-bridges on a programmed basis.

(b) The design and location of the foot-over-bridges and the sub-ways should be guided by the criterion of a rapid dispersal of the passengers through the identified exit points and keeping in view the future expansion of station building. The ramp provided for FOB or Subways should have gradient of 1 in 12 or flatter.

(c) New FOBs should be at least 6m wide at ‘A-1’ ‘A’ and ‘C’ category stations, wherever feasible. New FOBs at ‘A1’ & ‘A’ category stations should be compatible for installation of escalators. Foot over bridges shall be provided at all crossing stations during doubling/gauge conversion up to ‘D category station, wherever the same are not available.

(d) The design for the foot-over-bridge should provide for covering which should preferably be provided at the initial stage itself.

(e) At stations where there is more than one platform without any foot-over-bridge or sub-way connecting them, a pathway for passengers should be provided connecting the ends of the platforms. The pathways should have a minimum width of 2 m and should ensure that it is clear of all obstructions such as signaling equipment, etc. which should be suitably bridged.

(f) For foot-over-bridges, sub-ways and pathways, the lowest overhead clearance for the movement should be of 2.75m.

18.0 Waiting Rooms:

(a) Waiting Rooms need not be provided at suburban stations i.e. Category 'C Stations.

(b) At non-suburban junctions and terminal stations, the facility should be based on the volume of traffic changing over and the time the passengers have to wait as determined by the Commercial Department.

(c) If the area to be provided for the Waiting Rooms is sufficiently large, the Commercial Department may provide separate Waiting Rooms for the general and female passengers and passengers of different classes.

19.0 Signages:

All the signage at the station should be standardized in terms of Railway Board's Circular No. 97/TGII/39/11/signage dated 11.3.1999 as amended from time to time. For location of signages, a plan should be made for each station.

20.0 Stalls and Trolleys:

The number of trolleys and catering stalls under the platform shelter should be reduced to minimum and automatic vending machines should be encouraged to replace existing vending stalls.

(a) Modular stalls shall be provided to save space on platforms. These should be as per Railway Board's Circular no. "99/TG/3/631/5/Pt-1, dated 25.02.2000 as amended from time to time."

(b) Efforts should be made to make the stations cooking free and reduce the number of trolleys.

(c) Minimum trolleys and catering stalls under the covered shed should be allowed.

(d) Automatic vending machines should be encouraged to replace existing vending stalls.

21.0 Facilities for Physically Handicapped:

Railways are to provide convenience to the physically handicapped persons to comply with the provision of "The Persons with disabilities (Equal Opportunities; protection of rights and full participation)" Act, 1995. As per provisions of this Act, equal opportunities are to be given to handicapped persons in terms of employment, access to various places and services. The relevant provisions for Railway are as under:

(i) Section 44(b) of the Act states that "Establishments in the transport sector shall, within their limits of the economic capacity and development, for the benefit of persons with disability take special measures to adapt toilets in rail compartment, vessels, air-crafts and waiting rooms in such a way to permit the wheel chair users to use them conveniently."

(ii) Section 45(d) of the Act states that "The appropriate government and local authorities shall, within the limits of the economic capacity and development, provide for engraving edges of railway platforms for the blind or for the persons with low vision".

(iii) Section 45(e) of the Act states that the "The appropriate government and local authorities shall, within their limits of the economic capacity and development, provide for devising appropriate symbols for disability."

(iv) Section 46 of the act states that "The appropriate government and local authorities shall, within their limits of the economic capacity and development, provide for

(a) Ramps in public buildings.
(b) Adaptation of toilets for wheel chair users.
(c) Braille signals and auditory signals in elevators/lifts.
(d) Ramps in hospitals, primary health centers and other medical care and rehabilitation institutions. Commercial department being a nodal department for Passenger Amenities should co-ordinate and ensure provision of above facilities in systematic manner.

v) The Commercial Department shall ensure provision of these facilities.

vi) Notices in the prescribed languages should be prominently displayed near such pathway crossings the track, for the use of disabled persons that “while crossing the pathway, attendant should also accompany the disabled person”.

vii) For further guidance on the subject refer RDSO’s Guidelines circulated by Railway Board vide letter no. 2012/LM(PA)/08/04/Policy/PwDs dated 06.06.13 or as amended from time to time.

22.0 Station Name Boards:

(a) Station names should preferably be engraved and painted on the principal name boards made of stone or reinforced cement concrete. The principal name boards painted on both faces should be fixed at both the ends of the platform and generally oriented at right angle to the track without in any way infringing the Schedule of Dimensions. The actual angle at which the name boards are fixed should be determined by the site conditions ensuring the criterion that the name board is clearly visible from the approaching trains.

(b) In the case of long platforms and at stations so identified by the Engineering Department, additional secondary name boards at convenient intermediate positions usually at the rate of one for two coaches may be fixed parallel to the length of the platform. Such secondary name boards can be made of framed metal, asbestos or wooden sheets and painted on the sides (one or both) facing the track.

(c) The length and width of the principal and secondary name boards will be determined by the total written material to be engraved or painted on the name boards. The height of the lower edge of the principal and secondary name boards should be 2m above the platform level.

(d) The station names & their spelling on all types of name boards should be as approved by the State Government. The Commercial Department may decide the name, spelling of language of station name in consultation the appropriate Railway Users Consultative Committee and State Government. The script for the station names in Hindi shall be Devnagari and for other languages as adopted by the respective State Governments.

(e) The size of the letters and their prominence for all the scripts shall be uniform and conform to the following:

Principal & Secondary Name Boards:	Height of letters 300m thickness in proportion to the style of the script
Tertiary Name Boards:	Height of letters 75mm and thickness in proportion to the style of the script

(f) All station name boards shall be properly illuminated so that they are legible at night. Special importance is to be given to the principal name-boards which may

be specially illuminated with a bright electric lamp so that the whole of the board is clearly visible and legible at night.

(g) Station names in the same scripts as specified here in above may also be displayed on the following structures so as to be visible from a running train, the letters being in Black on Traffic Yellow or White background:

(i) Lamp shades in letters of 75 mm height

(ii) High service tanks and other Tall Structures in letters of 300 mm to 600 mm height.

(iii) Cabins in letter of 300 mm height illuminated with a bright electric lamp where the cabin is electrified.

(h) The Mean Sea Level rounding off to nearest half a meter, shall be written on principal station name board.

23.0 Time Table Boards and Fare Lists:

Boards or cement plaques, with or without wire-netting, should be provided at suitable places, by the Commercial Department, for posting time tables and fare lists thereon.

24.0 Design of Station Complexes & Preparation of Master Plan:

(a) The layouts for the construction of the stations including the circulating areas, station buildings, goods shed etc., should be so planned as to be functionally efficient. For important stations, the Engineering Department may engage the services of Architectural Consultants to evolve suitable plans.

(b) The station buildings should incorporate in them the features of the local architectural heritage wherever possible. While extending or modifying the existing station buildings, it must be ensured that the new construction harmonizes with the architecture of the existing station buildings. The plinth level of the station buildings should provide for raising of the platform to a high level platform.

(c) For all stations, the centre of the station building acts as the reference point for the yard plans, inter-station distances, chargeable distances, etc. The reference point shall be prominently marked with an engraved vertical arrow

on the external walls of the station building with the caption "CENTRE LINE OF STATION" engraved below it. The location represents a fixed reference point and shall not be altered if the station building is subsequently extended, altered or rebuilt. The fixed reference point shall be maintained properly and in the event of removal of the part of the structure on which it is fixed, the reference point shall be re-engraved at the same location on any other permanent structural element available.

(d) A permanent Bench Mark (B.M.) linked with the Survey of India B.M. System should also be provided in the prescribed manner on a suitable part of the station building at a location least likely to be disturbed. A list of B.M.s should be maintained in the offices of SE (Works), ADEN, & DEN with complete description of their location, level etc.

(e) In all stations buildings, camp office/ facilities for keeping material for day today repair be provided for SE (Works) as per **Annexure 4.7 in IRWM.**

25.0 Approach Roads and Circulating Area:

(a) The location of new stations and their facilities covering Booking offices, Goods sheds, etc. should be so chosen as to be convenient to the city, town or village served by the station. The station and goods shed approach should have an easy and unobstructed connection with the main road system serving the station.

(b) The approach roads for all the station facilities within the Railway land should be maintained by the Engineering Department. The portion of the approach road beyond the Railway Boundary linking the main road network of the city, town or village can also be maintained by the Engineering Department if the Road Authorities agree to the arrangement with the maintenance being undertaken as a Deposit work.

(c) The circulating area adjoining the station building and goods shed should be properly designed to ensure rapid dispersal of the passengers and road vehicles and avoiding conflict between pedestrian and vehicular traffic. The circulating area should provide adequate parking space, nominated space for embarking and disembarking for vehicular traffic, and loading and unloading of goods. The circulating area should facilitate a smooth unhampered flow of the road traffic in the vicinity of the station building and goods shed.

(d) While formulating the plans for new circulating area or modifying the existing circulating areas, the Engineering Department may consult the appropriate local authorities to ensure that the Railway's planning matches with the local authorities' planning for the road traffic management near the station area.

(e) Whenever circulating areas are redesigned, altered or wherever stations are congested, possibility of providing FOB landings directly into circulating areas should be examined as it decongests main platforms.

(f) No statues and plaques should be provided in the station premises.

ANNEXURES:

ANNEXURE-1.1a

SCHEDULE OF FINISHING ITEMS

	Exterior			Interior		
	Colour washing	Painting external surface with water proofing cement paint	Text mat or poly mat based equivalent synthetic silicon based exterior paint	Painting with plaster Paint, Synthetic enamel paint, Oil bound distemper, Acrylic Paint, Acrylic distemper	Polishing /Painting of interior wood work and Painting of steel work	White washing of kitchen and pantry
(1)	(2)	(3)	(5)	(6)	(7)	(8)
1.Hospitals	1 year	3 years	5 years	Corridor O.T. Rooms -1 year & Other areas - 2 year	4 years	1 Year
2.(a) Refreshment rooms (b) Rest Houses for Officers and Sub-ordinates (c) Running rooms	1 year	3 years	5 years	2 years	4 years	1 Year
3.Station Buildings	1 year	3 years	5 years	2 years	4 years	-
4.(a) Offices and Service buildings (b) Institutes and clubs (c) Schools (d) Gate-lodges, cabins etc.	1 year	3 years	5 years	2 years	4 years	1 year
5. Workshops, running sheds, Goods Sheds, transhipment sheds, repacking sheds etc.	1 year	3 years	-	2 years	4 years	-

Note: The above periodicity can be modified with the approval of SAG officer in HQ based on local environmental/climatic condition.

Schedule of Finishing Items for Residential buildings

	Exterior Colour washing & interior white washing incliuding ceiling	White washing of kitchen and pantry	Painting with plaster Paint, Synthetic enamel paint, Oil bound distemper, Acrylic Paint, Acrylic distemper	Polishing /Painting of interior wood work and Painting of steel work	Premix, Semi dense/ Dense Carpeting of roads	Collection of water sample & analysis	
						Physical & Bacte-riological	Chemical
1	2	3	4	5	6	7	8
Periodicity							
Ty. II, III, IV & V	1 year	1 year	2 year	3 year	5 year	1 Month	6 Months

ANNEXURE-1.1b

MAINTENANCE NORMS OF SANITATION ITEMS

S.No.	Item		Type of Structure/ Building		
			Hospitals	All other Service Buildings	Residential Buildings/ Colonies
1.	Cleaning and Disinfecting of water storage/ Distribution tanks, Water mains		Once in 3 months	Once in 6 months	Once in 6 months
2.	Cleaning of manholes/ Gully chamber/ Inspection chambers and flushing of building sewers		Once in 6 months	Once in 6 months	Once a year before monsoon
3.	Cleanliness of drains	Storm water drains	Once a year before monsoon	Once a year before monsoon	Once a year before monsoon
		Wet drain meant to serve as quarter drains	At least once a fortnight	At least once a fortnight	At least once a fortnight
		Other small drains parallel to roads	At least once a month	At least once a month	-
4.	Ciearing of Rank Vegetation	During monsoon	At least once a month	At least once a month	At least once a month
		Rest of the period	As per requirement	As per requirement	As per requirement

ANNEXURE-1.2

REGISTER OF SPECIAL REPAIRS

Special Repair Group.....

S. No.	Complaint No.	House No./ Locality	Location of Repairs	Approximate Quantity	Repairs required in			Schedule of Repairs
					Less than 1 months	Within 3 months	Within 6 month	
1	2	3	4	5	6	7	8	9

ANNEXURE-2.1

SCHEDULE OF INSPECTION OF Sr.ADEN/ADEN, SSE (WORKS) AND JE (WORKS)

SN	Item	Frequency	
		Sr. ADEN /ADEN	**Senior Section Engineer (Works) and Junior Engineer (Works)**
1	Staff quarters & Service Buildings	Once in 5 Years (20% every year).	Once in a year by rotation.
2	Inspection of complete Water supply systems.	Once in a year.	Once in three months by rotation.
3	Inspection of Sewerage & drainage system.	Once in 3 years.(1/3rd every year).	Once in a year by rotation.
4	Verifications of land boundaries.	Once in a year.	Once in a year by SE(works) and once in six months by JE(works)
5	Land verification given on license basis.	At discretion.	Once in a year by rotation.
6	Inspection of hoarding boards (Location & Structural safety).	At discretion.	Once in a year by rotation.
7	Inspection of roads.	At discretion.	Once in every 2 years by rotation
8	Inspection of Afforestation and Horticulture works	At discretion.	Once in every 6 months by rotation.
9	Inspection of Steel structures such as Workshops, Running sheds, Platform covers, FOBs and Flood light Towers.	Once in 5 year. (20% every year).	Once every year by rotation.
10	Cast iron, Wrought iron or Pressed Steel Plate water tanks and staging whether of steel	-do-	Once every year by rotation.

SN	Item	Frequency	
		Sr. ADEN /ADEN	**Senior Section Engineer (Works) and Junior Engineer (Works)**
	sections or rails.		
11	Other structures in which timber, rail or steel work is used to support any part of the structure.	-do-	Once every year by rotation.
12	Religious structures on Railway land.	Once in a year.	Once every year by rotation.
13	Inspection of Petty Repair Books at stations.	Once in two months.	Once in a month by rotation.
14	Inspection of ORH, SRH, Running Room, Crew Booking lobby, Hospital, Officer's Club, Railway Canteen, Railway School, Railway Institute & Community Hall.	Once in three months.	Once in a month by rotation.
15	Inspection and checking of office and store of SSE(Works)/JE(Works)	Minimum once a year thoroughly especially stores and imprest. Routine inspection during each trolley inspection.	Minimum once a year thoroughly especially stores and imprest.

ANNEXURE-2.2

QUARTER/BUILDING INSPECTION REGISTER

Station/Location : Building/Quarter No. & Type :

Date of Inspection :

(Item wise details to be inspected in residential quarters are mentioned in Annexure 3.2b)

Items	**Need repair (Observation with Quantity)**	**Need replacement (Observation With quantity)**	**Priority of repair**		
			Immediate	Annual	Routine
Condition of walls					
Condition of Floor					
Condition of door-window					
Condition of Roof including Leakage					
Condition of Water supply, Sanitary fittings and drainage					
External Services like sewers etc					
White wash/color wash & Painting					
Common/ circulating area, Road					
Any other item requiring attention & Remarks					
Signature of Inspecting Official with designation					

ITEM WISE DETAILS TO BE INSPECTED IN RESIDENTIAL QUARTERS ARE:-

1. Walls

1.1 Cracks
1.2 Condition of plaster
1.3 Condition of masonry
1.4 Dampness etc.

2. Floors

2.1 Cracks
2.2 Settlement
2.3 Skirting, Dados etc

3. Doors, Windows, Ventilators & Cupboards

3.1 Condition of glass panes
3.2 Condition of panels in shutters
3.3 Improper/missing fittings

i. Hinges
ii. Handles
iii. Tower Bolts
iv. Aldrops
v. Floor door stopper
vi. Knobs
vii. Cleats
viii. Hooks & Eyes
ix. Curtain Rods
x. Stays
xi. Pelmets etc.

4. Roofs

4.1 Leakages /Damp patches
4.2 Tie rods of jack arch.
4.3 Golas, Khurras
4.4 Drip course
4.5 Rain Water pipe
4.6 Parapet, coping etc.

5. Water supply & Sanitary fitting

5.1 Leakages in pipe joints
5.2 Functioning of washers
5.3 Functioning of traps in fittings
5.4 Functioning of floor traps

5.5 Functioning of overhead/low level cistern
5.6 Condition of overhead tank
5.7 Cleaning of overhead tank
5.8 Fittings

i. Wash basin
ii. Mirror
iii. Glass shelf
iv. Towel rail
v. Hangers
vi. Sinks
vii. Taps
viii. Pillar cocks
ix. Showers
x. Cisterns
xi. Ball valves
xii. Seat cover
xiii. Steps

6. External Services

6.1 Manhole covers
6.2 Covers to gully traps
6.3 Cleaning of manholes
6.4 Plinth protection
6.5 Cleaning of storm water drain
6.6 Approach roads
6.7 Service lanes

7. Finishing

7.1 White wash/ colour wash/ distemper

i. When was it done last?
ii. When is it due?
iii. Existing conditions

7.2 **Painting**

i. When was it done last?
ii. Existing conditions
iii. When is it due ?

8. Common Areas

8.1 Railing to staircase
8.2 Staircase steps
8.3 Staircase nosing
8.4 Shafts etc.

*****

ANNEXURE-2.3

COMPLAINT REGISTER

Division…… AEN…… SSE/SE/JE……

SN	Time & date of Complaint	Colony Flat /house No.	Description of complaint	Classification (tick where appropriate)		Action Taken with date				Remarks of SSE/JE regarding compliance & balance work to be done	Sign of SSE / JE
				Urgent	Other	Given to	Date given	Date attended	Details of work done		

ANNEXURE-2.4

REGISTER OF STANDARD MEASUREMENTS OF BUILDINGS.

Station/Kilometrage.....

Block No.	No.of units	Particulars of buildings and out-houses	Area in square Metres			
			White washing inside	White washing outside	Painting wood-work	Distempering inside Officer or Senior Group C staff Qrs.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Plan No.	Sources from which the quantities are taken		Dated signature in token of correctness		Remarks	Divisional Engineer's initials.
	M.B No.	Page No.	Section Engineer.	ADEN		
(8)	(9)	(10)	(11)	(12)	(13)	(14)

ANNEXURE-2.5

ROAD INSPECTION REGISTER

Division : Station/Location :

Section : Description of Road :

Date of Inspection /Compliance Items	Inspection Date	Compliance Date	Inspection Date	Compliance Date	Inspection Date	Compliance Date
Carriageway						
a. Pot Holes						
b. Subsided trench						
c. Hazardous Obstructions						
Footpath						
a. Pot Holes						
b. Subsided trench						
c. Hazardous Obstructions						
Drainage						
a. Ponding/Flooding						
b. Missing/broken manhole cover etc.						
Other Miscellaneous items requiring attention						
Remarks regarding action proposed/Instruction passed on						
Signature of Inspecting Official with designation.						

ANNEXURE-4.1

STANDARDS OF QUALITY OF DRINKING WATER
PHYSICAL AND CHEMICAL STANDARDS

S.No.	Characteristics	Requirement (Desirable limit)	Permissible limit in the absence of alternate source
1	Turbidity (NTU scale)	1	5
2	Colour Hazen units	5	15
3	Taste and odour	agreeable	agreeable
4	Ph value	6.5 to 8.5	No relaxation
5	Total dissolved solids (mg/l) max.	500	2000
6	Total hardness as CaCo3(mg/l) max	200	600
7	Chlorides as Cl2(mg/l)	250	1000
8	Sulphates as SO4 (mg/l) max.	200	400**
9	Fluorides as F (mg/l)max.	1.0	1.5
10	Nitrates as NO3 (mg/l)max.	45	No relaxation
11	Calcium as Ca (mg/l) max.	75	200
12	Iron as Fe (mg/l) max.	0.3	No relaxation
13	Zinc as Zn (mg/l) max.	5.0	15.0
14	Mineral Oil (mg/l)max	0.5	No relaxation
15	Copper as Cu (mg/l) max.	0.05	1.5
16	Residual free Chlorine (mg/l) max	0.2*	1.0
	Toxic materials		
17	Arsenic as As (mg/l) max.	0.01	0.05
18	Cadmium as Cd	0.003	No relaxation

S.No.	Characteristics	Requirement (Desirable limit)	Permissible limit in the absence of alternate source
	(mg/l)max.		
19	Lead as Pb (mg/l)max.	0.01	No relaxation

Source: Indian Standard - Drinking water - Specification (First Revision) IS: 10500 - 2012 by BIS

*When protection against viral infection is required, it should be min. 0.5 mg/l.

** Provided Magnesium (as Mg) does not exceed 30 mg/l.

ANNEXURE-4.2

1. Sanitary Inspection Form for Piped Water

I. Type of Facility PIPED WATER

1. General Information: Division ....., Station....., Area.....
2. Date of Visit
3. Water samples taken? …….. Sample Nos. …….

II. Specific Diagnostic Information for Assessment

(Please indicate at which sample sites the risk was identified) Risk Sample No.-

1. Do any tap stands leak? Y/N ……
2. Does surface water collect around any tap stand? Y/N ……
3. Is the area uphill of any tap stand eroded? Y/N ……
4. Are pipes exposed close to any tap stand? Y/N ……
5. Is human excreta on the ground within 10m of any tap stand? Y/N ……
6. Is there a sewer within 30m of any tap stand? Y/N……
7. Has there been discontinuity in the last 10 days at any tap stand?Y/N ……
8. Are there signs of leaks in the mains pipes in the Parish? Y/N……
9. Do the community report any pipe breaks in the last week? Y/N ……
10. Is the main pipe exposed anywhere in the sampling area? Y/N ……

Total Score of Risks ..../10

Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low

III. Results and Recommendations:

The following important points of risk were noted :(list nos. 1-10)

Signature of Inspecting Official:

Comments: .....

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.....

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32

2. Sanitary Inspection Form for Piped Water with Service Reservoir

I. Type of Facility PIPED WATER WITH SERVICE RESERVOIR

1. General Information: Division ....., Station....., Area.....
2. Date of Visit:
3. Water samples taken? …….. Sample Nos. …….

II. Specific Diagnostic Information for Assessment

(Please indicate at which sample sites the risk was identified) Risk Sample No

1. Do any standpipes leak at sample sites? Y/N ……
2. Does water collect around any sample site? Y/N ……
3. Is area uphill eroded at any sample site? Y/N ……..
4. Are pipes exposed close to any sample site? Y/N ……
5. Is human excreta on ground within 10m of standpipe? Y/N ……
6. Sewer or latrine within 30m of sample site? Y/N ……
7. Has there been discontinuity within last 10 days at sample site? Y/N ……
8. Are there signs of leaks in sampling area? Y/N ……
9. Do users report pipe breaks in last week? Y/N ……
10. Is the supply main exposed in sampling area? Y/N……
11. Is the service reservoir cracked or leaking? Y/N ……
12. Are the air vents or inspection cover insanitary? Y/N ……

Total Score of Risks ..../12

Risk score: 10-12 = Very high; 8-10 = High; 5-7 = Medium; 2-4 = Low; 0-1 = Very Low

III. Results and Recommendations:

The following important points of risk were noted:

(list nos. 1-12)

Signature of Inspecting Official:

Comments: .....
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.....
.....

3. Sanitary Inspection Form for Piped Water Supply with service reservoir and mechanized pumping

I. Type of Facility Piped Water Supply with service reservoir and mechanized pumping

1. General Information: Division ....., Station....., Area.....**36**
2. Date of Visit:
3. Water sample taken? …….. Sample No. ……. FC/100ml ……..

II. 1. Does the pipe leak between the source and storage tank? Y/N…….
2. Does surface water collect around any tapstand? Y/N ……
3. Can animals have access within 10m of the reservoir ? Y/N------
4. Does open defecation is prevalent or cattle-dung is observed within 50 m of the reservoir? Y/N……..
5. Is there a sewer within 30m of any tapstand or reservoir ? Y/N--------
6. Are the pipes corroded ? Y/N--------
7. Are there signs of leaks in the mains pipes in the Parish? Y/N…….
8. Are the reservoirs used for human and cattle bathing ? Y/N--------
9. Are the buried pipes ever checked for leakage ? Y/N--------
10. Are storage tanks are cleaned at specified intervals ? Y/N--------

Total Score of Risks …./10

Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low

III. Results and Recommendations:

The following important points of risk were noted:
(list nos. 1-10)
Signature of Inspecting Official:
Comments: .....
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.....

4. Sanitary Inspection Form for Deep borehole with Mechanized Pumping

I. Type of Facility DEEP BOREHOLE WITH MECHANISEDPUMPING

1. General Information: Division ....., Station....., Area.....
2. Date of Visit:
3. Water sample taken? …….. Sample No. ……. FC/100ml ……..

II. Specific Diagnostic Information for Assessment Risk

1. Is there a latrine or sewer within 100m of pump house? Y/N……..
2. Is the nearest latrine un-sewered? Y/N…….
3. Is there any source of other pollution within 50m? Y/N…….
4. Is there an uncapped well within 100m? Y/N…….
5. Is the drainage around pump house faulty? Y/N……..
6. Is the fencing damaged allowing animal entry? Y/N…….
7. Is the floor of the pump house permeable to water? Y/N……..
8. Does water forms pools in the pump house? Y/N……
9. Is the well seal insanitary? Y/N……..

Total Score of Risks …./9

Risk score: 7-9 = High; 3-6 = Medium; 0-2 = Low

III. Results and Recommendations:

The following important points of risk were noted:

(list nos. 1-9)

Signature of Inspecting Official:

Comments: .....

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5. Sanitary Inspection Form for Borehole with Hand pump

I. Type of Facility BOREHOLE WITH HANDPUMP

1. General Information: Division ....., Station....., Area.....**36**
2. Date of Visit:
3. Water sample taken? …….. Sample No. ……. FC/100ml ……..

II. Specific Diagnostic Information for Assessment Risk

1. Is there a latrine within 10m of the borehole? Y/N…….
2. Is there a latrine uphill of the borehole? Y/N…….
3. Are there any other sources of pollution within 10m of borehole? Y/N…….
   (e.g. animal breeding, cultivation, roads, industry etc)
4. Is the drainage faulty allowing ponding within 2 m of the borehole? Y/N…….
5. Is the drainage channel cracked, broken or need cleaning? Y/N……..
6. Is the fence missing or faulty? Y/N…….
7. Is the apron less than 1m in radius? Y/N……..
8. Does spilt water collect in the apron area? Y/N……..
9. Is the apron cracked or damaged? Y/N……..
10. Is the hand pump loose at the point of attachment to apron? Y/N…….

Total Score of Risks …./10

Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low

III. Results and Recommendations:

The following important points of risk were noted:

(list nos. 1-10)

Signature of Inspecting Official:

Comments: .....

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6. Sanitary Inspection Form for Protected Spring

I. Type of Facility PROTECTED SPRING

1. General Information: Division ....., Station....., Area.....**36**
2. Date of Visit:
3. Water sample taken? …….. Sample No. ……. FC/100ml ……..

37

II. Specific Diagnostic Information for Assessment Risk

1. Is the spring unprotected? Y/N……..
2. Is the masonry protecting the spring faulty? Y/N……..
3. Is the backfill area behind the retaining wall eroded? Y/N……..
4. Does spilt water flood the collection area? Y/N……..
5. Is the fence absent or faulty? Y/N……..
6. Can animals have access within 10m of the spring? Y/N…….
7. Is there a latrine uphill and/or within 30m of the spring? Y/N…….
8. Does surface water collect uphill of the spring? Y/N……..
9. Is the diversion ditch above the spring absent or non-functional? Y/N…….
10. Are there any other sources of pollution uphill of the spring? Y/N……..

(e.g. solid waste)

Total Score of Risks …./10

Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low

III. Results and Recommendations:

The following important points of risk were noted:

(list nos. 1-10)

Signature of Inspecting Official:

Comments: .....

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7. Sanitary Inspection Form for the source of Dugwell (Ringwell)

I. Type of Facility : Dugwell/Ringwell

1. General Information: Division ....., Station....., Area.....**3**
2. Date of Visit:
3. Water sample taken? …….. Sample No. ……. FC/100ml ……..

II. Specific Diagnostic Information for Assessment Risk

1. Is there a latrine or sewer within 30m of the dugwell? Y/N……
2. Is the wall of the well lined properly and the well covered adequately ? Y/N……..
3. Does open defecation is prevalent or cattle-dung is found within 50 m of the ringwell? Y/N……..
4. Does the well have raised concrete/cemented platform around its fence ? Y/N----
5. Is there any water drainage facility available around platform of the well and does the drainage facility leads to water stagnation within 30 m of the wall ? Y/N……..
6. Does the well have fixed stainless steel/aluminium buckets with chain pulley around its fence for drawing water? Y/N…….
7. Is the well deep ? Y/N…….
8. Does the water of the well appears visibly clean ? Y/N……...
9. Is there any other source of pollution within 10 m of the well? (e.g. animal breeding, cultivation, roads, industry etc) Y/N……..
10. Was the well chlorinated during last 7 days Y/N……..

Total Score of Risks …./10

Risk score: 9-10 = Very high; 6-8 = High; 3-5 = Medium; 0-3 = Low

III. Results and Recommendations:

The following important points of risk were noted:

(list nos. 1-10)

Signature of Inspecting Official:

Comments: .....
.....
.....
.....

ANNEXURE-6.1

INSPECTION OF BUILDINGS/GARDENS

(A) Lawn :

(i) Weeding

(ii) Patch repair

(iii) Renovation

(iv) Regrassing

(B) Hedge :

(i) Gap filling

(ii) Replacement

(C) Prunning & Training :

(i) Naturally required prunning

(ii) Prunning required for security

purpose of building as well as occupant

(D) Planting Beds :

(i) Needs Replacement

(ii) Gap filling

(E) U/F Water Supply:

(i) Matter to be reported to U/F Water

Division after inspection.

(F) Rockeries :

(i) Gap filling of dead one

(ii) Replacement of damaged, weak

(iii) Replacement of stones

(iv) Thinning, trimming

(v) Redesigning of paths,

Maintenance of paths

(G) Kitchen Garden:

(i) Change in site

(ii) Plan for planting of vegetables

(H) Road Side Plantation :

(i) Gap filling Nos.

(ii) Trimming, prunning

(iii) Tree Guards not required & to be removed/repair/painting etc.

(iv) Proposal for new plantation, Digging of holes etc.

(v) Misc.

(vi) MOU-Detailed report(performance & financial achievements)

ANNEXURE-8.1

SCALE OF PLINTH AREA (As per Railway Board letter no. 2013/LMB/10/15 dated 11/12/2013)

Type	Unit Area (main)	Staircase/ circulation	Balcony	Utility area/ balcony	Parking Norms
	sqm	sqm	sqm	sqm	Equivalent Car Space (per unit)
II.	54.00	7.00	6.5	2.50	1.0
III.	63.00	7.00	6.5	3.50	1.25
IV	86.00	7.00	6.5	3.50	2.00
Servant room-1	17.00	-	-	-	
IV Special	106.00	7.00	12.00	3.50	2.00
Servant room-1	17.00	-	2.50	-	
V	145.00	7.00	12.00	4.50	2.00
Servant room-1	21.50	7.00	2.50	-	
VI	203.50	7.00	21.50	4.50	3.00
Servant room-1	21.50	7.00	3.50	-	
VII	287.00	7.00	35.00	9.00	3.00
Servant room-2	2x21.50	7.00	4.00	-	
VIII	403.00	7.00	45.00	12.00	4.00
Servant room-4	4x21.50	3.50	4.00	-	

Note: The other details for calculation of plinth area, Scale of amenities, General specification etc are available in Railway Board letter no. 2013/LMB/10/15 dated 11/12/2013 copy of which is given in explanatory notes volume.

ANNEXURE-8.2

SCALE OF AMENITIES FOR SERVICE BUILDINGS / HOSPITAL AND DISPENSARIES

S.N	Description of Item	Proposed System Hospital/Service buildings
1.	**Flooring**	
a)	In rooms, internal circulation area	Vitrified tiles/Terrazo/Marble/flooring with white cement.
b)	Common circulation area, staircase	Kota stone flooring/ vitrified/ granite/ processed marble and matching skirting upto 150 mm.
c)	Toilets/Urinals	Anti Skid Ceramic Tiles
d)	Skirting / Dado in Urinals.	Ceramic glazed tiles upto ceiling height with a decorative band of tiles.
2.	**Finishing**	
a)	External	White washed/Colour washed or washed mosaic plaster in ordinary cement or exposed brick work with matching colour wash.
b)	Internal Walls	All walls & ceiling to be treated with 2 mm thick POP plaster and cornices followed with a coat of emulsion/ plastic emulsion paint except all ceilings, which will be done with white wash.
c)	Wood work and steel work.	Synthetic enamel paint on all wood work and steel work
3.	**Frames**	
a)	Window	Pressed steel frames /Aluminium sheets/ Wood work
b)	Door	Pressed steel frames /wood work/ factory manufactured precast RCC frames/Aluminium.
4.	**Shutters**	
a)	window	Steel Glazed shutters/ Aluminium window/ wood work. Shutter to match with frame. Wire mesh shutters also to be provided
b)	Doors	30mm thick flush door with paintable surface.

c)	W.C. Bath room	Solid PVC shutters 30 mm thick or wood work or equivalent
5.	**Fittings**	Powder coated Aluminium (Anodised) / Stainless steel fittings
6.	Window sill lining 18mm thick projected with Kota stone/marble	Marble /Kota Stone/ granite
7.	W.C.	European type WC matching low level system with water jet
8.	Wash basin with one tap each	One in each WC/Toilets & Operation theatre etc. as per approved master plan of hospital.
9.	Towel rail C.P.Brass / PTMT	One C.P. brass in all toilet attached with room.
10	Mirror with Bevelled edge /P.V.C. frame with glass tray	One in each toilet/bath.

Notes:-

1. The above standard shall be followed for all new works/major renovation works. The existing flooring should not be disturbed, if condition is good and life is available.
2. In case, the existing floor/finish is different from the proposed one, there is no need of immediate replacement /change unless needed to be replaced on condition basis.
3. Standardization of specification of workshop flooring shall be as per ED/Works/RDSO's letter no. WKS/WS/05/FS dated 3.10.2012

Annexure-1

General Design Guidelines for Unit/Campus Design.

Following guidelines may be adopted while designing houses according to these Plinth Area Norms:

1. No utility balcony be located on the main facade of the building in all categories of house. Special care must be taken in the design so that overall aesthetic is not compromised.
2. Windows to be designed with the provision of window type AC's in all rooms in all the category of houses except kitchen, toilets, utility area etc., so that not breaking in walls is needed during occupation. Provision for split AC's should also be made for all the houses above Type-IV (special).
3. Location of all the electrical points shall be done as per the furniture layout proposed and approved.
4. Minimum floor to floor height in houses must be kept as 3000mm (10'0" approx.) below the slab.
5. Duplex houses for Type-VII & Type-VIII in multistory may be discouraged. However if designed, provision of pantry of adequate size may also be made at the first floor level within the overall plinth area of these categories.
6. Railings shall be of stainless steel/or any other material as per the design approved by the Architect may be provided.
7. Dual piping system & use of water from STP.
8. External finishes shall be used as per the climatic conditions, Architectural design & availability of local materials.
9. Granite cladding up to 7'-0" high in the common area shall be provided as per the approval of the Architect.
10. Entrance area to multistory group housing will be elegantly designed, may have common facilities, service center at ground floor.
11. Community facilities required as per the proposed population shall be provided as per norms.
12. Vehicular free pedestrian movement & Landscape design element such as raised lawns for bungalow shall be provided as per the Architectural design.
13. Provision for barrier free access as per the building bye-laws, PWD Act 1995 shall be provided.
14. As far as possible construction of stilt floor shall be avoided.
15. French windows shall be provided as per climatic conditions & Architectural design.
16. Double glass unit for windows shall be provided as per the requirement & approved Architectural design.

Scale of Amenities – Architectural – Main Unit

S. No -	House Category	Office	Living Room	Drawing Room	Dining Room	Family Lounge	Bed rooms	Kitchen	Store	No. of Servant Room/ Quarters	Utility Balcony	Toilets	Bath	WC
1.	Type-I	-	One	-	-	-	One	One	-	-	One	One	-	One
2.	Type-II	-	One	-	-	-	Two	One	-	-	One	One	-	One
3.	Type-III	-	One	-	-	-	Two	One	-	-	One	Two	-	One
4.	Type-IV	-	One	-	One	-	Three	One	-	One	One	Three	-	-
5.	Type-IV (Special)	-	One	-	One	-	Three	One	-	One	One	Three	-	-
6	Type- V	-	-	One	One	-	Three	One	One	One	One	Three	-	-
7.	Type – VI	-	-	One	One	-	Four	One	One	One	One	Four	-	-
8.	Type-VII	One	-	One	One	One	Four	One	One	Two	One	Four	-	-
9.	Type-VIII	One	-	One	One	One	Four	One	One	Four	One	Four	-	-
10.	Servant Qtrs	-	-	-	-	-	One	Kitchenette	-	-	One	-	One	One

Annexure - 2 (Contd.)

Item No.	Item	Type-I/II/III	Type-IV/IV (Special)	Type-V/VI	Type-VII/VIII	Servant Quarters
1.	**Kitchen Cabinets**					
i)	Cooking Platform	Yes	Yes			Yes
ii)	Stainless Steel AISI 304(18/8) kitchen sink as per IS 13983 with drain board	Yes	Yes			Yes
iii)	Built in cupboard without any shelves but with shutters of 18mm thick pre-laminated decorative particle board below cooking platform as per architectural design and specifications.	Yes	Yes, with drawers			
iv)	1" thick and not more than 40mm wide pre-laminated non decorative particle board/plywood shelves in tiers up to 7' 0" height covered with pre-laminated decorative particle board shutters along one wall as per Architectural design and specifications.	Yes	Yes			Yes
v)	Factory made Modular kitchen having sink with double bowl & double drain-board, cooking platform and Electric Chimney of reputed company			Yes	Yes	
2	**Wardrobes** Built in cupboard 650 mm wide with 18mm thick pre-laminated non decorative particle board as shelves and 18mm thick pre-laminated decorative particle board as shutters/steel Almirahs	One in each bed room up to ceiling height	One in each bed room up to ceiling height			One Up to 7'0" height
	Factory-made wardrobe Carcase, shelves, Drawers etc., manufactured in 19mm thick particle/block board & finished in emulsion paint and wardrobe shutter in 19mm thick particle/block board/plywood finished with exterior grade post formed lamination/natural veneer with melamine polish as per the approved sample.			One in each bed room up to ceiling height	One in each bed room up to ceiling height	
3	Magic Eye in front entry door.	One	One	One	One	One
4	Curtain roads with required accessories	In all windows doors in all rooms except kitchen, Toilets/Bath/WC	Drapery roads on all windows and doors in all rooms except kitchen, Toilets/Bath/WC	Same as Type IV & IV (Special)	Same as Type IV & IV (Special)	Same as Type I, II & III
5	Set of pegs	In all toilets/baths/WCs	In all toilets/Bath/WC and wardrobes	In all toilets/Bath/WC and wardrobes	In all toilets/Bath/WC and wardrobes	
6	18mm thick projected window Cill lining, Window jhambs	Kota Stone/green marble	Kota Stone/ Granite	Marble/Granite	Marble/Granite	Kota Stone

Scale of amenities – Civil **Annexure-3**

Item No.	Item	Type-I/II/III	Type-IV/IV (Special)	Type-V/VI	Type-VII/VIII	Servant Quarters
1.	Orissa WC Pan (European style) with low level dual flushing PVC cistern	One	One	One	One	One
2	European-type floor mounted/Wall-hung WC with seat, lid and low level dual flushing PVC cistern	Yes	Yes	Yes	Yes	
3	Water Jet/health faucet with European WC.	Health faucet with each WC.	Health faucet in each toilet	Health faucet in each toilet	Health faucet in each toilet	
4	Wash Basin with CP Brass mixture type for hot & cold water with single lever with quarter turns ceramic cartridges	One	One in each Toilet & one for dining area as per design	One in each Toilet & one for dining area as per design	One in each Toilet & one for dining area as per design	One
5	Tap (kitchen, toilet, bath & WC) CP Brass/PTMT bib cook provided with quarter turns ceramic cartridges.	2 in kitchen 1 in each toilet, bath & WC-PTMT in Type-I & II/CP Brass in Type-III	2 in kitchen 1 in each toilet, bath & WC-CP Brass.	2 in kitchen 1 in each toilet, bath & WC-CP Brass.	2 in kitchen 1 in each toilet, bath & WC-CP Brass.	2 in kitchen 1 in toilet/ bath & WC-PTMT.
6	Shower with CP Brass mixture type tap for hot & cold water with single lever, ceramic cartridges quarter turn.	1 in each toilet/bath	1 in each toilet/bath	1 in each toilet/bath	1 in each toilet/bath	
7	Towel rail CP Brass/PTMT.	One PTMT in each Toilet/bath	One CP Brass in each Toilet	One CP Brass in each Toilet	One CP Brass in each Toilet	One PTMT Toilet/bath
8	Mirror with PTMT glass shelf.	600x450mm with each wash basin	600x450mm with each wash basin	As per design with each wash basin	As per design with each wash basin	600x450mm with each wash basin
9	CP Brass/ceramic Toilet paper holder with European WC.	Yes in Type-III only	Yes	Yes	Yes	
10	Soap rack/Niche as per Architectural Design and Specifications.	One in each bath/Toilet	One in each Toilet	One in each Toilet	One in each Toilet	
11	Plumbing for water purifier and Geyser.	Yes	Yes	Yes	Yes	Yes
12	Storage tank of capacity as per NBC 2005 Provision of Separate tank for WC & Drinking water	Separate tanks for kitchen and toilets as per requirements for dual flushing system	Separate tanks for kitchen and toilets as per requirements for dual flushing system	Separate tanks for kitchen and toilets as per requirements for dual flushing system	Separate tanks for kitchen and toilets as per requirements for dual flushing system	Separate tanks to be provided for Servants in each category.

Scale of Amenities – **Electrical**

S. No.	Description	Type / category of Accommodation							Servant Quarter
		Type-I	Type-II	Type-III	Type-IV & IV (Special)	Type-V	Type-VI	Type-VII & VIII	
1.	**Power Points** (15 amp 6 pins)	2 in each Room 1 in kitchen 1 in Utility Area **Total 6**	2 in each Room 1 in kitchen 1 in Utility Area **Total 8**	2in each Room 1 in kitchen 1 in Utility Area **Total 8**	2 in each Room 1 in kitchen 1 in Utility Area **Total 12**	3 in Drawing Room 3 in Dining Room 2 in each Bedroom 2 in kitchen 1 in utility Area **Total 15**	3 in Drawing Room 3 in Dining Room 2 in each Bedroom 2 in kitchen 1 in utility Area **Total 17**	2 in Office 4 in Drawing Room 3 in Dining Room 2 in Family Lounge 2 in each Bedroom 2 in kitchen 1 in Utility Area **Total 22**	Total 2
2.	**Plug Points** (5 amp)	1 in each Room 1 in Kitchen 1 in Balcony **Total 4**	1 in each Room 1 in kitchen 1 in Balcony **Total 5**	1 in each Room 1 in kitchen 1 in Balcony **Total 5**	1 in each Room 1 in kitchen 1 Balcony **Total 7**	1 in each Room 1 in kitchen 1 in Store 1 in main Balcony **Total 8**	1 in each Room 1 in kitchen 1 in Store 1 in each Balcony **Total 9**	1 in Office 1 in each Room 1 in kitchen 1 in Store 1 in each Balcony **Total 12**	Total 2
3.	**Bracket Lights** (with normal fittings excluding lamp / bulb)	1 in each Room 1 in Kitchen 1 in each Toilet 1 in utility **Total 3**	1 in each Room 1 in Kitchen 1 in each Toilet 1 in utility **Total 4**	1 in each Room 1 in Kitchen 1 in each Toilet 1 in utility **Total 4**	2 in each Room 1 in Kitchen 1 in each Toilet 1 in utility **Total 11**	1 in Store 1 in each toilet 1 in utility **Total 10**	1 in Store 1 in each toilet 1 in utility **Total 12**	1 in Store 1 in each toilet 1 in utility **Total 12**	Total 3
4.	**Ceiling Fans**	1 in Living Room 1 in each Bedroom **Total 3**	1 in Living Room 1 in each Bedroom **Total 3**	2 in Living Room 1 in each Bedroom **Total 4**	2 in Living Room 1 in Dining Room 1 in each Bedroom **Total 6**	2 in drawing Room 1 in dining room 1 in each bedroom 1 in main Balcony **Total 6**	2 in drawing room 1 in dining room 1 in family lounge 1 in each Bedroom 1 in each Balcony **Total 12**	2 in drawing room 1 in dining room 1 in family lounge 1 in each Bedroom 1 in each Balcony **Total 14**	Total 1
5.	**Call Bell points**	1	1	1	2	3	3 (one with image display system)	4 (one with image display system)	
6.	**Exhaust Fans**	1 each in kit. & Bath & WC	1 each in kit & Bath & WC	1 each in kit. & toilet/Bath/WC	1 each in kit. & toilet	1 each in kitchen & toilet	1 each in kitchen & toilet	1 each in kitchen & toilet	Total 2
7.	AC Points (with MCB connected Socket outlet with wiring)	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	1 in each room except kitchen & toilet	
8.	**Geyser Point** (With MCB connected Socket outlet with wiring)	1 in each toilet	1 in each toilet	1 in each toilet	1 in kitchen 1 in each toilet	1 in kitchen 1 in each toilet	1 in kitchen 1 in each toilet	1 in kitchen 1 in each toilet	1 in toilet

9.	**EDB/MCB Point** (single phase)	1	1	1					1
10.	**EDB/MCB** (3 phase)				1	1	1	1	
11.	**Cable TV point**	1 in living room 1 in each Bed room	1 in living room 1 in each bedroom	1 in living room 1 in each bedroom	1 in drawing room 1 in each bedroom	1 in drawing room 1 in each bedroom	1 in drawing room 1 in dining room 1 in each bedroom	1 in office 1 in drawing room 1 in dining room 1 in family lounge 1 in each bedroom	1
12.	**Telephone point** As per the app. Of competent authority	1 in living room	1 in living room	1 in living room	1 in drawing room	1 in drawing room 1 in each bedroom	1 in office 1 in drawing room 1 in dining room 1 in each bedroom	1 in office 1 in drawing room 1 in dining room 1 in family lounge 1 in each bedroom	1
13.	**Decorative Light Fittings** (without Lamp/bulb					3 in drawing room 3 in dining room 2 in each bedroom 1 in kitchen **Total 13**	3 in drawing room 3 in dining room 2 in each bedroom 2 in kitchen **Total 16**	3 in office 3 in drawing room 3 in dining room 3 in family lounge 2 in each bedroom 2 in kitchen **Total 22**	
14.	**Fluorescent Lamp fittings** (T-5/T-8) (Excluding tube)	1 in each room 1 in kitchen **Total 3**	1 in each room 1 in kitchen **Total 4**	1 in each room 1 in kitchen **Total 4**	1 in each room 1 in kitchen **Total 6**	1 in drawing room 1 in dining room 1 in each bedroom 1 in kitchen **Total 6**	1 in drawing room 1 in dining room 1 in each bedroom 1 in kitchen **Total 7**	1 in office 1 in drawing room 1 in dining room 1 in family lounge 1 in each bedroom Total 9	
15.	**Modular Switches**					Yes	Yes	Yes	

Note: * All the common area e.g. Lifts & Staircase Lobbies, Connecting corridors etc. shall have lighting arrangement along with light fixtures as per actual design. As far as possible concealed wiring shall be used in all electrical works. LED shall be used with approval of competent authority.

ANNEXURE – 5

GENERAL SPECIFICATIONS

S. No.	Description	New Specifications – 2012 (Revised)				Remarks
		Type I,II & III	Type – IV, IV (Special)	Type – V & Type – VI	Type- VII & Type - VIII	
1	**FOUNDATION**					
	Foundation & Structure	As per structural requirements	Same as Type-I, II & III	Same as Type-I, II & III	Same as Type-I, II & III	The design shall vary as per soil condition
2	**SUPER STRUCTURE**					
	For multi-storied framed structure	RCC framed & Filler walls of Aerated, Cement Concrete (ACC)/Cellular Concrete Block (CLC)/Brick work/Fly-ash brick	Same as Type-I, II & III	Same as Type-I, II & III	Same as Type-I, II & III	Any other energy efficient suitable local material in consultation with Architect and Structural Engineer.
	For Load bearing construction	Brick-work/stone wall/ ACC/CLC as per requirement / Fly – ash brick	Same as Type-I, II & III	Same as Type-I, II & III	Same as Type-I, II & III	Any other energy efficient suitable local material in construction with Architect and Structural Engineer
	Internal Partition	Half brick thick masonry in ACC/CLC/Fly-ash Bricks	Same as Type-I, II & III	Same as Type-I, II & III	Same as Type-I, II & III	Any other energy efficient suitable local material in construction with Architect and Structural Engineer
3	**DOOR & WINDOWS**					
	a) Frames (except of toilet/bath & WC) (i) Door	2nd class teak wood/UPVC extruded frame sections with wall thickness minimum 2.0 mm/powder coated or	Same as type-I, II & III	Same as type-I, II & III	All frames of external doors & windows must have double rebates for fixing of mosquito proof wire-mesh shutters on external side.	

		extruced/tubular section/Engineered wood section				
(ii)	Window	2nd class teak wood/UPVC extruded frame sections with wall thickness minimum 2.0 mm/powder coated or anodized aluminum extruded/tubular section/Engineered wood section along with the provision of sub frame of suitable material.	Same as type-I, II & III	Same as type-I, II & III	Any other locally available material with the approval of concerned Chief Architect.	
(iii)	Doors & windows of toilet/bath/WC	2nd class teak wood/UPVC extruded frame sections with wall thickness minimum 2.0 mm/powder coated or anodized aluminum extruded/tubular section/Engineered wood section	Same as type-I, II & III	Same as type-I, II & III		
(iv)	Door/Window frames in servant area	N.A	For servant quarters same as Type-I to III	For servant quarters same as Type-I to III		

	(i) Main Door/External Door Shutters	Double shutters one with painted iron grill with stainless steel Grade 304 mosquito proof wire mesh and other 35 mm thick factory made hardwood framed paneled shutter with melamine polish. Or 35mm thick MS tubular box section styles and rails frame with hard wood panels Or Factory made flush door	Same as Type-I to III except that pre-laminated particle board paneling will be decorative on both sides. Or 35 mm thick factory made exterior grade both side decorative type flush door shutter with natural veneer and melamine polish.	Double shutters one Safety door in stainless steel frame with mosquito proof S.S. wire-mesh and SS fittings and other with 35 mm thick 2nd class teak wood framed paneled with decorative veneer on both sides/made exterior grade both side decorative veneered type flush door shutter with melamine polish. Or UPVC extruded section of wall thickness minimum 2.0 mm framed glazed/paneled shutters For servant quarters same as type-I to III.	Same as Type –V & VI	
	ii) Servant's Area	N.A.	For servant quarters same as Type-I to III.		Same as Type –V & VI	
	Kitchen door	35mm thick shutter having 12 mm thick pre-laminated (one side decorative and other side balancing) particle Board panel at the bottom part and stainless steel wire mesh at upper part.	Same as Type-I,II & III	35mm thick shutter having 12mm thick both side decorative pre-laminated/veneered particle board panel/2nd class teak wood with melamine polish at the bottom part and stainless steel wire mesh at upper part.	Same as Type –V & VI	

	Bath, WC & Toilet Door	laminated flush door (one side decorative other side balancing)	III	laminated flush door (one side decorative other side balancing)		
	Other Door	35mm thick harcwood styles and Rails with paneling with both sices' decorative pre-laminated particle board and finish in melamine pclish/Factory made flush door	Same as Type-I II & III	35mm thick, 2nd class teakwood styles & Rails pareled of 12mm thick both side natural wood veneer finish paneled/Glazed paneled shutter with 5.5 mm thick float glass panes and finished in melamine polish.	Same as Type –V & VI	
	c) Window Shutters All window shutters	Double shutter one with M.S tubular box section/hardwood framed glazed panel and other with wire-mesh shutter	Same as Type I, II & III	Double shutter one with 2nd class teakwood framed glazed panel and other with wire-mesh shutter Or UPVC extruded section of wall thickness minimum 2.0mm framed glazed/ paneled shutters	Same as Type –V & VI	
	Servant' Area (Door & Windows)	N.A.	For servant quarters same as Type I to III	For servant quarters same as Type I to III	For servant quarters same as Type I to III	Shutters in all respective rooms shall be as per the finishes of Type-I to III in those rooms.
	d) Hardware & Fittings Main Units	Powder coated/anodized Aluminium S.S. fittings	Powder coated/anodized Aluminium S.S. fittings	Same as type-IV & IV special	Stainless Steel/Chromium plated brass/Nickeled Chromium Brass	Rubberized Door flashing at the bottom rails of all externals doors shall be provided for protection from insects and rainwater etc.

	[illegible]	[illegible]	fittings	fittings	fittings	
4	**FLOORING, SKIRTING & DADO**					
	Flooring Living/Drawing Room, Dining & Family Lounge	Vitrified/Ceramic tile flooring of size not less than 400mm x 400mm	Vitrified tile flooring of size not less than 600mm x 600mm	18 mm thick gang-saw cut pre-polished granite /marble/stone of approved shade/double charged vitrified tile flooring of size not less than 600x600mm/Scratch resistant Engineered wood or laminated wooden flooring only in Living/drawing room, Granite, Marble, Stone & Tiles.	Same as Type-V & VI	
	Office area	N.A.	N.A.	N.A.	Scratch resistant Engineered wood or laminated wooden flooring.	
	Bedrooms	Scratch resistant Ceramic tiles/ Vitrified tiles of size not less than 400mm x 400 mm with joints finished with matching grout.	Scratch resistant Ceramic/Vitrified tiles of size not less than 600mm x 600 mm with joints finished with matching grout	Vitrified/double charged vitrified tiles (with water absorption less than 0.08%) of size not less than 600mm x 600 mm Scratch resistant Ceramic tiles with joints finished with matching grout. Engineered wood or laminated wooden flooring in one bedroom.	Same as Type-I & VI	
	Kitchen	Anti skid vitrified tiles of size not less than 300mm x 300mm with water absorption less than 0.08% laid seamless with joints finished with matching grout	Same as Type-I, II & III	Anti skid vitrified tiles of size not less than 400mm x 400mm with water absorption less than 0.08% laid seamless with joints finished with matching grout	Anti skid vitrified tiles of size not less than 600mm x6300mm with water absorption less than 0.08% laid seamless with joints finished with matching grout	

	Kitchen Counter	marble/granite stone with nosing	marble /granite stone with nosing	cut pre-polished granite with nosing as per design		
	Common circulation area	Mirror-polished Kota stone/locally available stone as approved by architect and matching skirting as per architectural drawing	Same as Type-I, II & Type-III	18mm thick pre-polished granite/Vitrified tiles (with water absorption less than 0.08%) flooring not less than 600mm x 600mm	18mm thick gang-saw cut pre-polished granite/marble stone of approved shade/vitrified tiles (with water absorption less than 0.08%) size not less than 600mm x 600mm	
	Servant's Area (Flooring)	N.A.	For servant quarters Same as Type I to II	For servant quarters Same as Type I to III	For servant quarters Same as Type I to II	Finishes in all rooms shall be as per the finishes of Type-I to III in respective rooms
	Common circulation area in servant quarters	N.A.	Mirror-polished Kota stone/locally available stone	Same as Type-IV & Type-IV (special)	Same as Type-IV & Type-IV (special)	Use of locally stone shall be as per approval of Chief Architect
	Staircase- Main	Pre-polished Kota stone in single length of treads & risers	Same as Type-I, II & III	18mm thick pre-polished/hones/flamed finish Granite in single length of Treads & Risers	Same as Type-V & Type-V I	Nosing design in treads shall be as per Architectural design
	Fire escape Staircase	Pre-polished Kota stone in single length of tread & risers	Same as Type-I II & III	Single length pre-polished Kota stone in Tread & Risers	Same as Type-V & VI	- Do -
	Toilets/Bathroom/WC	Glazed ceramic anti-skid of size not less than 300x300 mm including grouting the joints	Same as Type-I, II & III	Rectified Ceramic anti-skd tiles of size not less than 300 x 300	Anti-skid vitrified/Ceramic tiles (with water absorption less than 0.08% not less than 300x300 mm Or 18mm thck gang-saw cut pre-polished granite stone	
	Skirting in rooms and other areas	100 to 150 mm high skirting matching the floor material.	100 to 150 mm high skirting matching the floor material.	100 to 150 mm high skirting matching with the floor material	100 to 150 mm high skirting matching the floor material.	

	b) Dado					
	Kitchen Dado	Ceramic tiles of size not less than 200 x 300 as per design from floor up to full height.	Same as Type-I, II &III	Ceramic tiles of size not less than 300 x 450 mm as per cesign from floor to full height	Ceramic tiles of size not less than 300 x 450 mm as per design from floor to ful height.	Must be read with Scale of Amenities in the respective categories
	Tcilets/bathrooms/WC Dado	Glazed ceramic tiles of size not less than 200 x 300 up to full height with decorative bands at certain intervals.	Same as Type-I, II & III	Glazed ceramic tiles of size not less than 300x450 up to full height with bands at certain intervals	Glazed ceramic tiles of size not less than 300x 450 mm up to full height with decorative bands at certa n intervals.	
5	**FINISHES**					
	Finishes Internal Finishes	All walls & ceiling to be treated with 2 mm thick POP (one time only) and painted with low VOC Acrylic washable distemper/Synthetic enamel paint on all wood works and steel works	All walls & ceiling to be treated with 2 mm thick POP (one time only) and painted with low VOC Acrylic washable distemper/Synthetic enamel paint on all wood works and steel works	All walls & ceiling to be treated with 6 mm thick POP punning (one time only) and painted with low VOC plastic emulsion paints/Synthetic enamel paint on all wood works and steel works	Plastic emulsion paint with low VOC of approved shade in roller finish over 6mm thick POP wall punning	
	External Finishes	Quartz reinforced Texture Acrylic paint finish/Premium Acrylic smooth water proof exterior finish/washed mosaic plaster in premium cement. Synthetic enamel paint on all wood work & steel work	Same as Type-I, II & III	Quartz reinforced texture Acrylic paint finish of approved shade/premium Acrylic smooth water proof exterior finish/washed mosaic plaster in premium cement/exposed brick/stone work/GRC/Designer cement concrete tile cladding/ACP cladding in combination with structural glazing	Same as Type-V & VI	In case of large campus etc., the External finishes of the residances shall match the overall colour & texture finishes within the campus.

- The new material & building techniques may be adopted, to be in line with the prevailing trends, without any increase in the approved plinth area rates.

ANNEXURE-8.4

PROFORMA FOR DETAILS OF OCCUPANCY

RAILWAY

Divn:_____ Station _____

Area of the building in terms of No. of Rooms

Type_____ with dimensions:-

No. of Units_____
Assessed rent per month Rs._____

Name of Building _____

Rent on Electric Installation per month Rs._____

Registered No.

Capital cost of each Unit:
Assessed monthly rent :
Pooled cost of each Unit:
No.of taps outside :
Inside :
Latrine Common/Separate

No. of Units Occupied	Name of Occupant	Designation Married or Single	Whether	Deficiencies
(1)	(2)	(3)	(4)	(5)
Rate of pay	Date of Occupation.	Date of vacation	Remarks including date & nature of repairs executed.	Deficiencies/damage at time of vacation
(6)	(7)	(8)	(9)	(10)

ANNEXURE-8.5

CHECK LIST WHILE TAKING OVER BUILDING/QUARTER AFTER CONSTRUCTION

S.No.	Description of item	Remarks
	GENERAL ITEMS	
1	Whether proper drains and drain pipes has been provided for the disposal of water.	
2	Whether the surrounding area cleared off, of unused materials and construction debris/waste etc.	
3	Whether plinth protection has been provided for the building?	
	INSIDE BUILDING ITEMS	
WALLS		
1	Are there any cracks in walls?	
2	Are there any signs of dampness/leakage on walls?	
3	Whether finishing of wall surface is smooth and proper?	
FLOORS		
1	Are there any cracks in floors, skirting and dado?	
2	Are the floors laid to proper slopes? Is there a stagnation of water in WC, bath and verandahs?	
3	Whether finishing of floor surface is smooth and proper?	
ROOFS		
1	Are there any leakages in roofs?	
2	Whether golas are properly made?	
3	Is the slope of roof proper?	
4	Are the traps and rain water pipes proper to drain water without ponding?	
DOORS, WINDOWS AND VENTILATORS		
1	Are all the fittings viz locking arrangement, tower bolts, pull bolts, door stoppers, hooks, stays and hinges etc. are provided & functioning properly?	
2	Whether quality of wood is as per specification?	
3	Whether surface of frame and shutter is smooth?	

FINISHING		
1	Is the plastering of walls and ceiling satisfactory, smooth and free from cracks and other defects?	
2	Is the painting of walls / doors and windows proper?	
WATER SUPPLY AND SANITATION		
1	Is there any leakage in the sewer lines, drainage pipes etc.?	
2	Are flushing cisterns, wash basins etc correctly fitted and working properly?	
3	Are the covers of manholes, gully traps and floor traps etc. provided?	
4	Is the slope of sanitary pipes proper?	
5	Is the condition of water overhead tank proper including float valve & cleaning of tank?	
Any other deficiency noticed in the building		

Signature of the contractor **Signature of Taking over Official**

ANNEXURE-10.1(a)

Proforma for 'Land Boundary Verification Register'

DETAILS OF BOUNDARY STONES BETWEEN KILOMETRE.....AND.....

Date of Inspection	DETAILS OF MISSING BOUNDARY STONES		Action Taken	Initials of In-specting officials
	L	R		

ANNEXURE-10.1(b)

PLAN SHOWING RAILWAY BOUNDARY STONES BETWEEN Km..... To .....

Rly Land Boundary Stones Shown Thus -

L and R indicate Boundary Stones on the Left & Right while facing in the direction of increasing Kilometrage.

Note : Dimensions of Railway Land boundary may be given from Centre Line of Track.

ANNEXURE-10.2

ENCROACHMENT INSPECTION REGISTER

(left page)

1. Location .....
2. Name of Encroacher .....
3. Father's Name & Address .....
4. Area Occupied .....
5. Use of Land..... (Commercial/Residential/Cultivation).....
6. Date of Commencement of Unauthorised Occupation.....
7. Date on which the Encroachment came to notice for first time.....
8. Reference of File No.....

Date of Inspection/ Review	Action Taken	Date of removal	Initials of Inspecting official

Note : Encroachment plan (to the scale) shall be pasted on the right hand side.

ANNEXURE-12.1

LIST OF BOOKS OF REFERENCE.

Item No.	Publications	Office which should be equipped with a copy of the publication		
		Divl./ Dy. Chief Engineer	ADEN	Sr. Sr. Section Engineer (Works)
1	Act, Indian Railway	1	1	1
2	Act, Land Acquisition and State Govt. Publications.	1	1	-
3	Act, Payment of wages, with notification as issued	1	1	1
4	Act. Forest, Center and State Government	1	-	-
5	Act, Workmen's Compensation	1	1	1
6	Alphabetical list of Railway			
7	Circulars – Statement Government a) Re: Construction near railway limits b) Sales Tax on Works Contracts, Royalty on minerals.	1	1	1
8	Circulars, State Government or Joint, re:Tanks affecting railway line.	1	1	1

Item No.	Publications	Office which should be equipped with a copy of the publication		
		Divl./ Dy. Chief Engineer	ADEN	Sr. Sr. Section Engineer (Works)
9	Code, Indian Railways, for the Engineering Department	1	1	1
10	Code, Indian Railways, for the StoresDeptt.	1	1	1
11	Code, Indian Railway for the Mechanical Department.	1	1	1
12	Code, Indian Railways for the Accounts Department	1	1	1
13	Code, Indian Railways Establishment	1	1	1
14	Codes, Indian Railway General	1	-	-
15	Codes, Indian Railways Standard, for Bridges, Structures and other subjects	1	1	1
16	Engineering Formulae Pocket Book	1	1	-
17	Engineering Standing Orders	1	1	1
18	Manual, Permanent Way	1	1	1
19	Manual, Signaling and	1	1	1

Item No.	Publications	Office which should be equipped with a copy of the publication		
		Divl./ Dy. Chief Engineer	ADEN	Sr. Sr. Section Engineer (Works)
	Interlocking			
20	Manual , Bridge	1	1	1
21	Manual, Works	1	1	1
22	Manual, Accident or circulars pertaining to accidents.	1	1	1
23	Price lists of Stores and Stores nomenclature and circulars as applicable.	1	1	1
24	Regulations, Hours of Employment, with notifications as issued	1	1	1
25	Regulations, Income Tax (where applicable)	1	1	1
26	Regulations government the placing of electric transmission lines across and underground cables under railway track	1	1	1
27	Rules, General and Subsidiary Parts I and II	1	1	1
28	Rules, reg. Leave, Passes & PTOs	1	1	1

Item No.	Publications	Office which should be equipped with a copy of the publication		
		Divl./ Dy. Chief Engineer	ADEN	Sr. Sr. Section Engineer (Works)
29	"Safety First", Rules	1	1	1
30	Schedule of Dimensions	1	1	1
31	Schedule of Powers in Estt. and other than establishment matters.	1	1	1
32	Chief Engineer's circular-Engineering Department	1	1	1
33	General conditions of Contract	1	1	1
34	Water supply for Railway Engineers – IRICEN Publication.	1	1	1
35	Rain Water Harvesting – IRICEN Publication.	1	1	1
36	Concrete Technology – IRICEN Publication.	1	1	1
37	Fundamental of Building Orientation & Layout – IRICEN Publication.	1	1	1
38	Works Hand Book of specifications for materials and works	1	1	1
39	Working Time Table	1	1	1

Item No.	Publications	Office which should be equipped with a copy of the publication		
		Divl./ Dy. Chief Engineer	ADEN	Sr. Sr. Section Engineer (Works)
	and Appendix thereto			
40	Working of Cranes and Hoists as issued	1	-	-
41	Bio-latrines	1	1	1
42	Economy in Water Supply	1	1	1
43	Pre-stressed Concrete Manual	1	1	1
44	Guidelines for Earthwork Compaction	1	-	-
45	* Technical Monograms	1	-	*

* Copies may be supplied to ADEN/Sr. Sr. Section Engineer (Works) as required).