Estd.1962

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SHIVAJI UNIVERSITY, KOLHAPUR

MAINTENANCE MANUAL

Index

CHAPTER 1

Maintenance

1.1 Introduction

Building maintenance is work undertaken to keep, restore or improve every facility i.e. every part of a 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 machinery, building and services, in good operating condition.

(ii) To restore it back to its original standards, and

(iii) To improve the facilities depending upon the development that is taking place in the building engineering.

In spite of recent improvements in building technology all the buildings deteriorate from the time they are completed. The rate of deterioration depends upon a number of factors. Not all the factors are under the control of the occupants. During the design and construction stages, the following become essential: -

(i) Right choice of material.

(ii) Suitable construction techniques.

(iii) Adequate specifications for construction and installation work.

(iv) Effective supervision throughout construction and rectification of defects prior to final certification.

(v) Provision of adequate space for landscaping with proper design.

In fact the Shivaji University, Kolhapur provide for obligatory maintenance by the original contractor in the initial stages for a period of six or three months, depending upon the nature of the work, immediately following the date of completion as there are bound to be teething troubles in any new construction. If these are attended to, the maintenance pressure will be reduced. Where there are inherent defects both in design and construction the maintenance cost raises disproportionately to a higher level and the anticipated life of building is reduced.

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 the Manual wherever the maintenance of building is referred, it will include the associated services also.

1.2 Maintenance Services:

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.

Excessive maintenance should be avoided. At the same time, maintenance should ensure safety to the occupant or the public at large and should comply with the statutory requirements. The need also depends upon intensity of usage.

The repair works are classified in under mentioned categories:

Day to day repairs/service facilities

Annual repairs

Special repairs

In addition to above the following works are also executed by the maintenance wing of Shivaji University, Kolhapur as per guideline prescribed by Government of Maharashtra.

1.2.1 Day to Day Repairs

Day to day repairs are carried out by Engineering section in all the buildings under its maintenance on the basis of day to day complaints received

1.2.2 Annual Repairs

To maintain the aesthetics of buildings and services as well as to preserve their life, some works like white washing, distempering, painting, cleaning of lines, tanks etc. are carried out periodically.

1.2.3 Special Repairs

Such works are undertaken to replace the existing parts of buildings and services which get deteriorated on ageing of buildings. It is necessary to prevent the structure & services from deterioration and restore it back to its original conditions to the extent possible.

1.2.4 Additions and Alterations

The works of additions/alterations are carried out in buildings to suit the special requirements of occupants for functional efficiency. The facilities are updated by carrying out such works.

1.2.5 Preventive Maintenance

Preventive maintenance is carried out to avoid breakdown of machinery and occurrence of maintenance problems in buildings and services. Works of preventive maintenance are carried out on the basis of regular inspection/survey.

1.2.6 Maintenance of Bungalows (Hon'ble vice chancellor, Pro-vice chancellor and Registrar)

Shivaji University, Kolhapur is maintaining campus these includes Hon'ble vice chancellor, Pro- vice chancellor and Registrar, residences etc. Special Care has been taken for maitainence of above residences.

1.3 Means of effecting maintenance

1.3.1 Repair estimates

Annul repairs and maintenance estimates for building and Services are prepared as per requirement in the beginning of the year. The estimates cater to day to day repairs and annual (periodical) repairs and should include the whole expenditure on cost of labour (regular work- charged staff and on muster roll), cost of materials required for day to day works, cost of work being carried out through work orders and contracts, municipal and other taxes, if any, payable by the Government /party, anticipated to be incurred the maintenance of buildings in question. The total estimated cost of maintenance of buildings/structures during the year should be within the prescribed limits as approved by the body concerned from time to time both for annual repairs and special repairs.

1.3.2 Engineering Section/Substation

Shivaji University, Kolhapur has been assigned for receipt and disposal of maintenance complaints which are made by the occupants. Usually Junior Engineer is in-charge of the above sections.

1.3.3 Modalities of maintenance

The maintenance works are undertaken through one of the following:-

(i) Directly employed staff

(ii) Through Contracts

Whether the work should be carried out through contract or own work force is decided on the nature of the following: -

(a) Type of work

(b) Amount of work

(c) Expediency or urgency.

i) Through directly employed labour:-

Directly employed labour is the most appropriate for routine day to day maintenance. This comes under the following two categories:-

Departmental labour: The cost of establishment due to workers such as their pay, allowances etc. are directly charged to the maintenance work.

In future there would be no further recruitment to the categories of Blacksmith and Upholster. The existing incumbents of these two categories will however continue to hold their respective posts, till vacated on account of promotion, resignation, termination of service, retirement, and death or otherwise.

The rounding off should be done at the level of Sub-division and a fraction of less than half ignored and half or more than half treated as one.

ii) Through contracts

The annual repair work such as white washing, painting, petty works such as replacement of glass panes, repairs to plaster, changing roof tiles etc. are generally carried out through contract. The special repair works such as regarding, laying of water proofing treatment, repair of water supply pump sets, equipment's and accessories of A/C plants, Audio/Video conference systems, substation equipment's,

DG sets lifts are of good magnitude in financial terms, hence these are generally carried out through contracts.

1.4 Register of Buildings

Engineering section should maintain a Register of buildings up to date. The Engineer I/c. should certify to that effect at the end of every financial year after ensuring that necessary additions in the cost and in structures are made up to date. This certificate should be furnished by him to the Registrar every year in the month of July.

1.5 Safety of Buildings

(i) All Buildings/structures are required to be inspected once a year by the Junior Engineer in-charge to ensure that the building/structure is not unsafe for use. In case of electrical and other installations, the Deputy Engineer (Electrical) should inspect the same and record a certificate to that effect. The Junior Engineers are 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 Deputy Registrar (Civil) 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 Building and works committee 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) In case it is decided to demolish such unsafe building, it should be disposed of without land by auction under the powers vested in competent authorities.

1.6 Cleanliness in the Campus

Cleanliness will be maintained in the Campus. Malba accrued from the execution of repairs in residences/buildings will not be allowed to stay at the place of work. Suitable points will be identified in the localities where malba generated from the day to day work will be stored by the departmental workers or the workers of contractors. It will be ensured that after work, malba is collected from the work place and deposited at the identified spot. Suitable provision will be made in the agreement for lifting of malba periodically from this identified spot. Safeguard will be taken that occupants do not throw garbage on this malba otherwise it would create unhygienic conditions for the residents.

Any leakage from the water supply line, sewers or unfiltered water supply line noticed in the campus will be repaired immediately. Water will not be allowed to stagnate on the roofs, courtyards, road side 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. Overhead 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 repellants in the Cooler's pads etc. to check spread of Malaria.

1.7 Monitoring of maintenance

For effective maintenance and achieving client satisfaction; it is necessary to monitor the maintenance complaints at various levels.

CHAPTER 2

Engineering Section

2.1 Complaint Register

Complaint Register is an important document maintained at engineering section. All complaints received at engineering section are entered in the Complaint Register (Annexure-1) and these are closely watched to ensure that the complaints are attended to as expeditiously as possible. There may be different registers for different disciplines for the convenience of concerned Junior Engineer/Garden superintendent.

For maintaining the Complaint Register

(i) Every complaint shall be assigned a serial number. Time of lodging of complaint shall be invariably recorded by the Receptionist. The complainant shall be intimated the complaint number and the likely time frame for attending the complaint for his reference.

(ii) All complaints shall be entered in the register. Civil, Electrical complaints shall be entered in different registers.

(iv) First entry in the complaint register on any day shall start on a new page.

(v) As far as possible, the occupants shall be asked to indicate the nature of complaints to the attendant at Service Centre, so that the right person is deputed for the job and he carries with him necessary tools and materials. In many cases, the complaints are vague and the workmen have to make more than one trip to the house, to find out the nature of work and the tools and materials required. This wastage of man power should be avoided.

(vi) Occupants shall be advised to register their complaints invariably with the Engineering Section. The Occupants may be advised to approach the senior officers in the Department only in cases where the complaints are not attended to within a reasonable time or the work has not been done satisfactorily. They shall be asked to quote the complaint number and date, so that the complaint could be investigated.

2.2 Disposal of Dismantled Material

Maintenance is a continuous process and lot of dismantled material is generated in this process. Dismantled material should not be allowed to be accumulated in large quantity and for more periods.

It occupies lot of valuable space in the engineering section, which otherwise could be put to use for storing serviceable material. 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 University 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 Engineering Section. Most of the dismantled material can be survey reported by the Dy. Registrar (Civil). It is the responsibility of Junior Engineer that Survey Reports of the dismantled material are sent to Dy. Registrar (Civil) periodically in time and ensure that valuable space at the Engineering Section is not occupied.

CHAPTER 3

Day-Day and Annual Repairs

3.1 Day to day repairs

Day-Day repairs are carried out by Shivaji University, Kolhapur in all the buildings under its maintenance. The works which are to be attended on day to day basis such as removing chokage of drainage pipes, man holes, restoration of water supply, replacement of blown fuses, repairs to faulty switches, 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. These services are provided after receipt of complaint from the users at the respective engineering section Complaints of periodical nature like white washing, painting etc. which are usually got attended through contractors and cannot be attended on daily basis is transferred to register of periodical repairs.

3.2 Annual Repairs

The works of periodical nature like white washing, colour washing, distempering, painting etc. are called annual repair works and these are generally undertaken through system of contracts.

The periodicity of applying white washing and colour washing for a building has been laid down by the Government. The periodicity is two years for white washing and colour washing and three years for painting. In addition, works such as patch repair to plaster, minor repairs to various items of work, replacement of glass panes, replacement of wiring damaged due to accident, replacement of switches, sockets tiles, gap filling of hedges/perennial beds. Replacement/Replanting of trees, shrubs, painting of tree guards, planting of annual beds and trimming/pruning of plants etc., which are not emergent works and are considered to be of routine type, can be collected and attended to for a group of houses at a time and particular period of financial year, depending upon the exigency. Such works can be done under day to day repair also.

Following guidelines shall be followed for planning and execution of Annual repair works.

(i) The total estimated cost of maintenance of a building/ structure during a year shall be within the prescribed limits as approved by the Government from time to time, for Annual repairs.

These may be suitably increased by the approved maintenance cost index in the relevant year.

(ii) Programme for carrying out annual reports shall be drawn up at the commencement of each financial year.

(iii) The annual survey of the buildings shall be such as to highlight defects of structural nature in the buildings which require personal investigation by the Dy. Registrar (Civil).

(iv) The entire exercise of finishing under annual repair should be carried out in a professional manner. Before sanctioning of estimate/invitation of tenders, it should be ensured that all defects like dampness of walls, damage to RCC, brick work and plaster are removed in advance, so that the building looks renovated and presentable for sufficient time after annual repairs.

(v) Payment for annual repairs is generally made on the basis of standard measurements and as such, there should not be lack of supervision on the part of the Departmental Officers. The Junior Engineer shall make it a point to physically inspect 100% of the buildings where annual repairs are to be carried out. The Dy. Registrar (Civil) shall carry out personal inspection to the extent of 50% and 25% respectively. The JE shall maintain a register indicating the number of residences where annual repairs are to be carried out, dates of his inspection and his observations regarding the quality of the works. The results of the inspection of the Dy. Registrar (Civil) shall also be recorded in the same register.

3.2.1 Register of periodical repairs

Complaints of periodical nature like white washing, painting etc. which are usually got attended through contractors and cannot be attended to on daily basis are transferred to this register. From this register/records of the particular premises appropriate information shall be passed on to the complainant about the admissibility of the request and the likely time it shall require for the compliance. (Annexure-5)

CHAPTER 4

Special Repairs

As the building ages, there is deterioration to the various parts of the building and services. Major repairs and replacement of elements become inevitable. It becomes necessary to prevent the structure from deterioration and under wear and tear as well as to restore it back to its original conditions to the extent possible.

The following types of works in general are undertaken under special repairs

(i) White Washing, Colour washing, distempers etc., after completely scrapping the existing finish and preparing the surface afresh.

(ii) Painting after removing the existing old paint from various members.

(iii) Provision of water proofing treatment to the roof. All the existing treatments known are supposed to last satisfactorily only for a period of about ten years.

(iv) Repairs of internal roads and pavements.

(v) Repairs/replacement of flooring, skirting, dado and plaster.

(vi) Replacement of doors, window frames and shutters. Replacement of door and window fittings.

(vii) Replacement of water supply and sanitary installation like water tanks, WC cistern, Wash basins kitchen sinks, pipes etc..

(viii) Re-grassing of lawns/grass plots within 5-l 0 years.

(ix) Renovation of lawn in 5-6 years.

(x) Replanting of hedges in 8-10 years.

(xi) Completely uprooting and removing hedges/ shrubbery.

(xii) Replanting of

a) Rose beds in 5-6 years.

b) Perennial beds in 5-6 years.

c) Canna beds in 1-2 years.

(xiii) Shifting of any garden feature from one site to another within building.

The building services fixtures including internal wiring, water supply distribution system etc. is expected to last for 20-25 years. There afterwards it may be necessary to replace them after detailed inspection.

Electrical special repairs in general are whole sale replacement of the wiring and the electrical installations. Earthling is also to be attended. Life of various Electrical Equipment's/installations etc.,

The expected economic life of the building under normal occupancy and maintenance conditions is considered to be as below:

(i)	Monumental buildings	100 years.
(ii)	RCC Framed construction	75 years
(iii)	Load bearing construction	55 years.
(iv)	Semi-permanent structures	30 years
(v)	Purely temporary structures	5 years

The life of the building mentioned above is only indicative and it depends on several factors like location, utilization, specifications, maintenance and upkeep/care• taking.

The replacement, renovation and major repairs become inevitable as the life of all the components are not identical.

All the three categories i.e. day - day, annual and special repairs/services are interrelated. Neglect of routine maintenance and preventive measures lead to more extensive periodical maintenance and in the long run major repair or restoration which could have been avoided or postponed.

4.1 Register of special repairs

Complaints of special nature repairs, which cannot be attended on daily basis, shall be transferred to this register. The special repairs to buildings shall be divided in following six groups: (Annexure-4)

(i) Concrete work.

(ii) Masonry works including plaster, flooring and brick work.

(iii) Wood work.

(iv) Steel work.

(v) Sanitary and Water supply.

(vi) Water proofing treatment.

(vii) Electrical wiring and fittings

Few pages shall be allotted separately to each of these groups in the register and an index shall be prepared in the beginning of the register. The complaint of special repair nature shall be transferred from the complaint register to the relevant group in this register. All details about the complaint shall be properly filled in the columns of the register.

4.2 Authenticity of Special Repairs

Any work of Special Repair to be undertaken in the division has to be certified by the Dy. Registrar (Civil). The Dy. Registrar (Civil) has to verify himself the necessity of undertaking Special Repair to any item of the building. Estimates of Special Repairs of course, will be initiated by Junior Engineer but Dy. Registrar (Civil).Before accord of approval at his level or sending it to higher authorities will record in writing in the body of the estimate that the necessity has been verified by him.

There should not be too many estimates for Special Repairs in a subdivision. As far as possible, number of estimates should be restricted to number of identified subheads as indicated in the register of Special Repairs. In that case it may be possible that one Special Repair Estimate is operated by more than one JE in the subdivision.

4.3 Extra Ordinary Special Repair

When expenditure on Special Repair to a particular building is in excess of the permissible yardstick of Special Repair, the same come under the category of Extra Ordinary Special Repair. Expenditure on Special Repair up to permissible li mi t can be incurred by the Dy. Registrar (Civil) beyond the permissible limit however Dy. Registrar (Civil) has to have the approval of the higher authorities.

CHAPTER 5

Additions/Alterations

Two types of Additions/ Alterations are carried out in non residential buildings. Addition/ Alterations are to be carried out to suit the special requirement of occupying department for functional efficiency. Such works of Addition/ Alterations are carried out at cost of occupying department after ascertaining the technical feasibility. Some Addition/ Alterations are carried out by Shivaji University, Kolhapur themselves as a general requirement for better functioning of offices located in the office complex. In case of residential buildings, some Addition/ Alterations are carried out by Shivaji University, Kolhapur keeping in view the safety of buildings, approach to buildings, augmentation of services etc. Which are beneficial to all residents in general works of addition/alterations are also carried out in residences at the request of occupants for providing facilities in the residences which otherwise are within the yardstick of facilities for those type of quarters but were not provided at the time of original construction. Such Addition/ Alterations are carried out on payment of certain percentage of estimated cost of providing the facility. (Annexure-6)

No additions/alterations once carried out to any Govt. residence except temporary prefab works purely related to special security aspects shall, however, be removed upon the vacation of these houses by the “allottee concerned. "

Under mentioned points shall be observed while carrying out addition/alterations in government buildings:

(i) No addition/alteration shall be carried out to permanent public buildings without the concurrence of the Chief Architect/Senior Architect in writing except for the amenities like provision of wash basin or sink etc.

(ii) The allottee shall be asked to fill up a form as at Annexure-11. Counterfoil of the form shall be returned to the allottee duly signed by the acknowledgement of the receipt of the application.

(iii) The work of addition/alteration shall not be taken up as a matter of rule but as exception since the availability of resources is limited.

(v) 'No non-usability' certificate in respect of houses where works of addition/ alterations have been taken up at request of allottee shall be issued except when such works render the house really unusable.

Works of additions/alterations on Horticulture s i d e can be carried out at the request of occupants depending upon t h e requirements. Such works are: -

i) Changes in length and design of hedges, shrubbery, planting beds and rockeries etc. Making some Changes in basic design of gardens/lawns by providing Mounds, undulations, rockeries etc.

ii) Providing some garden structures like pergolas, arches, GI pipe frames shelters, seats and water body etc.

iii) Digging of new tree /shrub pits, planting beds within existing garden area or changing the situation of beds, kitchen garden, lawns etc.

In Horticulture, the works of additions and alterations shall be carried with the approval of competent authorities as per the powers delegated to them and on availability of funds.

Timely communication and coordination shall be made by the discipline if their work taken up by it is likely to affect other disciplines.

CHAPTER 6

Preventive Maintenance

Preventive maintenance is carried out to avoid the breakdown in case of machinery or occurrence of maintenance problems in buildings and services. In case of buildings preventive maintenance against seepage for example, is necessarily to be carried out. Preventive maintenance however depends largely on routine inspection/survey of the buildings.

6.1 Accessibility for Maintenance

It is necessary that the place to be maintained is capable of being reached for maintenance to be carried out. Access varies from day to day needs to access for a trained and experienced man to attend to a maintenance problem.

In some of the structures regular shafts have been provided for water supply and sanitary installations. The shafts are too tight and there is no working space for workman. The problem is compounded by inadequate light in the shafts. Not only the elbow space has not been provided but there is no working platform for workman. The workmen refuse to attend to leakages and repair pipe lines in such circumstances. It is necessary to provide shafts with access/working platform for the work men to attend to repairs.

Replacement of glass panes in the windows have become another problem. In general the windows open outside and putty is also placed accordingly. In addition, for residential buildings, grill work is provided for safety of residents. The windows have generally a full sized glass sheet as a result it has become difficult to replace and even clean these glass panes. The problem is acute in buildings beyond three story's. It is necessary to provide proper accessibility to these windows through a regular arrangement in such a manner as to ensure fixing of glass and their cleaning from inside of the building, maintenance and upkeep of desert cooler & WTAC u n i t s installed at the windows.

Overhead tanks have been provided over the buildings. With a view to keep the roof inaccessible for the residents, no terrace staircase has been provided to reach the terrace. In the day to day maintenance, however the maintenance staff are called upon to go to the terrace to check the over flow and the like for which regular access IS necessary. Ladders should be provided as a means of access, preferably on a permanent basis.

Buildings of monumental nature are finished with special treatment on roof, false ceiling, wall panelling and carpetting on wall which may require to be attended. It is necessary to have permanent arrangements for reaching such heights as a part of maintenance tools. It can be a dismantlable tubular scaffolding system provided with rollers as a standby for reaching the false ceiling.

6.2 Inspection of buildings and services

6.2.1 Periodical inspections

(a) Buildings and services

The starting point of maintenance to building is the regular inspection of buildings. It should be carried out periodically with a view to keep down the restoration cost to the minimum and to attend to essential repairs at the opportune moment. The symptoms of malfunctioning varies from building to building and the resulting deterioration varies with reference to the climatic conditions, pollution, fungi, the insect attack, subsidence, flooding, intensity of usage, careless usage and the like.

It is necessary to know when the building should be inspected, what should be inspected, at what level of deterioration a component should be replaced or repaired and whether any preventive maintenance is called for.

As per Shivaji University, Kolhapur Citizens' charter and guidelines issued by Government, programme for maintenance work for the ensuing year is to be finalized by 30thApril of the year. To achieve this it is necessary that all buildings should be inspected by the JE in March and April. In general, the Overseer should inspect each and every building under his charge once every six months, the Junior Engineer once a year and the Dy. Registrar (Civil) should inspect all buildings where serious defects have been brought to his notice. In case there are doubts about structural soundness of a building, the same should be brought to the notice of Building Works Committee on a priority basis so as to take prompt remedial action. In fact, safety of the building is given a primary place and for this purpose, structural soundness is the most important requirement of the building.

There is necessity to ensure and maintain uniformity for objective inspection of the buildings as it is difficult for every member of staff to know what should be inspected.

These reports help in the following

(i) Preparation of a need based estimates for annual, special and extraordinary repairs of buildings.

(ii) Preparation of programmers for undertaking major repairs according to an established programme bringing minimum inconvenience to the residents/ occupants.

(iii) A regular inspection prevent/for stalls an unexpected break-down of a building this becomes necessary as we have to maintain building even beyond their normal life period

Inspection should also cover outside areas such as the drive ways, paths, lawns, gardens, hedges, trees, boundary walls, functioning of treatment plants provided if any in the form of septic tanks etc.

It is necessary to inspect all storm water drainage works before and during monsoon periods.

Any item pertaining to Civil/Electrical in garden area such as broken man-holes, Drains, water pipe lines, Cable etc. which needs repair should be reported to concerned Dy. Registrar (Civil)

(b) Electrical Installations

The Shivaji University, Kolhapur maintains the installations and services at the office and residences of VIP/VVIP including all arrangements made during functions held on their behalf at University campus. These inspections/instructions do not supersede the normal/periodical/routine checks which are required to be carried out on the equipment's and installations like insulation tests, Earth tests, Oil tests, Replacement of component schedule, oil replacement, other tests to be carried out as per manufacturer's recommendations, but are in addition to the same.

6.2.2 Inspections for taking over of buildings

Buildings along with their services are designed and constructed to meet specific user requirement. So as to ensure full user satisfaction, it is necessary that the buildings and services on their completion should be subjected to intensive review by the team of construction and maintenance Engineers.

During the course of construction, certain tests and checks are carried out by the engineer-in-charge of the construction.

Also whenever any works are entrusted to contracting agencies, these are tested and taken over by the Engineer-in-charge. Certain guarantee e certificates from the suppliers/manufacturers are also received by Engineer-in-charge before accepting materials a n d e q u i p m e n t ' s . Maintenance in charge should ensure that these are handed over to him at the time of handing over of facility.

6.3 Preventive maintenance

As mentioned above, for carrying out preventive maintenance, inspection of building has to be carried out. The building is to be inspected during the months of March-April and September-October. Monsoon winds bring rainfall to Maharashtra

i) South West Monsoon (June-October)

Experience has taught that monsoon rains, winds and cyclone cause considerable damage to buildings, tall structures, uproot trees and lamp posts, cause floods, roof leakage into buildings, blow water through broken window panels, blow off thatched

Roofs, hutments and bus shelters, cause disruptions in power supply, water supply and sewerage systems resulting in untold sufferings to people besides causing huge financial , losses to the ex chequer and endangering lives. To minimize such losses and avoid danger to life it is necessary to undertake some specific pre-monsoon preventive measures which are briefly discussed below :

6.3.1 Attending to services before Monsoon Rains/Cyclones.

Buildings and Services are to be thoroughly checked for safety and functioning before monsoon. In coastal areas the same are checked before cyclones. Precautionary measures are to be taken for various items of the buildings/services, some of which are mentioned below:

a) Temporary Roofing

Many buildings are provided with temporary roofing like AC Sheet roofing. Before the onset of the monsoon, the Engineer-in-charge of Maintenance should see that the L/J hooks, bitumen washers, Limpet washers are in position. Precautionary measures against blowing off the roof should be taken by lightly loading the roof temporarily or providing MS flats/rods fixed by bolts and nuts to purlins for rows of AC Sheets.

b) Door /Window glazing :

All broken glazing should be replaced and sufficient number of glass window panes and iron monger fittings should be kept in stock for emergency repairs. The tower holts, hooks and eyes and other wind appliances should be made in working condition. Occupants should be advised to keep the doors and windows closed during cyclonic weather especially at nights.

c) Checking buildings against seepage

Terraces of all the buildings may be inspected well ahead of the monsoon rains in June and December and necessary repairs carried out. The roofs should be cleaned and debris removed from the roof to avoid blockages in roof gutters and rain water pipes. Rainwater inlets should be checked and ensured that there are no damages around these. Vertical rain water pipes should be properly clamped to the walls. Seepage through cracks developed over Chajja is very common. It should be ensured that required repairs are carried out to the junction of Chajja with the walls.

d) Checking of external areas

Open areas and lawns should be inspected and measures taken to ensure that rain-water does not accumulate therein. Wherever storm water drains are under the maintenance of Shivaji University, Kolhapur the same should be desilted and paved surfaces or bunds repaired. Precaution should be taken against erosion of land and embankments.

e) Checking of sewers and sewage installations

All inspection chambers, manholes and sewer lines should be cleaned and flushed to establish free flow of sewage. Sewage sumps should be cleaned of accumulated grit, sand and sludge. Bunds of oxidation ponds should be strengthened wherever necessary.

f) Checking of electrical installations

Because of rise in ground water table at places, it may be necessary to remove electric pumping sets installed in wells and sump, below ground water level and raise them temporarily to safe levels. Care should be taken to ensure availability of stand• by power supply arrangement to take care of breakdown in power supply in monsoon or at the time of cyclones. The Diesel Generating sets should be checked and kept in working condition and wiring should be checked for loose connections.

g) Checking of Air-conditioning installations

Wherever Central AC plants or package units are provided, the dehumidification system consisting of strip heaters, humidistat etc. should be checked for their functioning.

6.3.2 Post monsoon/cyclone measures

Inspire of pre-monsoon measures taken by various buildings/services, very often these are affected during the monsoon and cyclones. In coastal or cyclone prone areas, the services are affected more. Immediately after monsoon, all important structures/services should be inspected by a team of engineers from all disciplines concerned with the maintenance and work should be planned to put the services in order immediately.

Overhead cables, uprooted light poles, restoration of power supply, disinfecting of water supply lines/installations, ensuring normal water supply, restoration of sewage pumping operations, flood relief works, repair to breaches to embankments of roads and bunds are some of the important areas which are to be attended immediately after monsoon/cyclone. Detailed inspection of the buildings should be carried out to ensure that broken false ceiling, broken glass panes, blown off A.C. sheet roof, claddings, doors and rolling shutters etc. are attended immediately.

Where breakdown would result in serious damage to the equipment and costly repairs. preventive maintenance is necessary. Whereas Preventive maintenance is also justified where it improves performance and the cost is less, compared to cost of repair after a failure.

The works of preventive maintenance in case of buildings are to be carried out latest by 15th June and 31st October. In case of periodic inspection machinery equipment is carried out to avoid the conditions leading to breakdown or harmful depreciation. It is also carried out for proper up-keep of Plant through servicing and repairs while they are still minor. However in case of machinery and equipment's, frequency of inspections should be decided and the system should be designed for improved maintenance techniques, low cost maintenance and avoiding the over maintenance on the basis of statistical data available for maintenance and manufacturers recommendations.

Annexure- 1

Engineering Section……. M/C Numbered

COMPLAINT REGISTRATION FORM

1. Flat No.

2. Name of the allottee

3. Nature of Complaint

Date .....

Signature & Name of the complainant

……

Received Complaint for Flat/Quarter No. ..... M/C Numbered

Date …….

Signature of Enquiry Clerk/ JE/Receiving Officer

Annexure- 2

ACKNOWLEDGEMENT TO COMPLAINT

No ……

Dated :……

To

Ref: Your Complaint No. .... dated ..... For Flat/Quarter No .....

Dear Sir,

The subject complaint is acknowledged Necessary action is being taken to fix-up an agency for attending to the same. We will revert back to you no sooner we are in a position to take up the subject complaint. I request you to kindly bear with us.

However, the complaint is likely to be attended in next ..... months.

Yours faithfully,

(Junior Engineer)

.

Annexure- 3

WORKERS NOTE BOOK

Sr. No.	S. No. of complaint	Flat/Quarter No. and Colony	Nature of Complaint	Details of work done	Balance work, if any	Sign. Of worker	Sign of occupant	Remarks
1	2	3	4	5	6	7	8	9

Annexure- 4

REGISTER OF SPECIAL REPAIRS

Special Repair Group_____

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

Annexure- 5

REGISTER OF PERIODICAL REPAIRS

SI. No.	Complaint No.	House No./Locality	Request re ardin2		Due/ Not due	Date planned for the work	Date of intimation to allottee	Date of completion of work
			White washing/ Distempering , Fans cleaning, Surface Dressing of lawn, Vegetation cleanin etc.	Door/window Painting, Painting of fans,D.B. Open metal conduits etc.				
1	2	3	4	5	6	7	8	9

Annexure-6

APPLICATION FOR ADDITIONS/ALTERATIONS I N GENERAL POOL ACCOMMODATION

PART A :TO BE FILLED BY THE ALOTTEE :

I. Name ..... .

2. Designation ....

3, Office Address : ....

4. Residential Address: ..... .

5. Type of Accommodation in which residing .....

6. Actual Date of occupation of present accommodation: ..... .

7. Particulars of works desired with location (Refer guidelines enclosed).

.....

ACKNOWLEDEMENT

Received application dated .....for addition/alteration in Flat/quarter

No ..... of colony ....., ...

Dated:...

Signature of Junior Engineer

Annexure - 7

(a) Inspection of Buildings (Civil)

(a) House no. and Type: (b) Location:

(c) Date of Last Inspection: (d) Date of present inspection

S.No.	*Item* No.	Needs Repair Action	Quantity	Cost	Needs Replacement Quantity	Cost	Priority Immediate	Annual	Routine Repairs
	2	3	4	5	6	7	8	9	10
1.	**Walls**								
1.1	Cracks								
1.2	Repair to plaster								
1.3	Repair to brick work								
1.4	Dampness								
2.	**Floors**								
2.1	Cracks								
2.2	Settlement								
2.3	Slopes								
2.4	Skirting cracks								
2.5	Dados cracks								
3.	**Doors, Windows, Ventilators & Cupboards**								
3.1	Glass panes broken								
3.2	Panels in shutters broken								
3.3	Panels fit improperly								
3.4	Improper/missing fittings								
	3.l.l Hinges								
	3.1.2 Handles								
	3.1.3 Tower Bolts								
	3.1.4 Aldrops								
	3.1.5 Floor door stopper								
	3.1.6 Knobs								
	3.1.7 Cleats								
	3.1.8 Hooks& Eyes								
	3.1.9 Curtain Rods l.l.IO Stays								
	3.1.l0 Pelmets								

4. Roofs

4.1 Leakages/Damp patches

4.1 Water proofing treatment

4.2 Golas

4.3 Khurras

4.4 Brick drip course

4.5 Rain water pipe

4.6 Regrading

4.7 Top Layer of tiles

4.8 Parapet, coping

5. Water Supply & Sanitary fittings

5.1 Leakages in pipe joint

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 Air Locking

5.7 Leakages in pipe joints

5.8 Condition of overhead tank

5.9 Cleaning of overhead tank

5.I0 Fittings

5.10.1 Wash basin

5.10.2 Soap container

5.10.3 Mirror

5.10.4 Glass shelf

5.10.5 Towel rail

5. 10.6 Hangers

5.10.7 Sinks

5.10.8 Taps

*5.*10.9 Pillar cocks

5.10.10 Showers

5.10.11 Cisterns

5.10.12 Ball valves

5.I 0.13 Seat cover

5.10.14 Step

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 washing/colour washing/distemper

(a) When was it done last?

(b) When is it due?

(c) Existing condition.

7.2 Painting

(a) When was it done last?

(b) Existing conditions

(c) When is it due.

8. Common Areas

8.1 Railing to staircase

8.2 Staircase steps

8.3 Staircase nosing

8.4 Shafts

(b) Inspection of Buildings (Electrical)

(a) House No. and Type: (b) Location:

(c) Date of Last Inspection: (d) Date of present inspection:

Sl.No.	Item No.	Needs Repair Action	Quantity	Needs Replacement Cost	Quantity	Priority Immediate	Annual	Routine Repairs
1. Switch Boards								
1.1 Regulator								
1.2 Switches								
1.3 Fixing of tiles								
2. Fans								
2.1 Conopy fixing								
2.2 Speed and noise								
3. Socke outlet points and connection								
3.1 Tile								
3.2 Switch								
3.3 Outlet connection if any								
4. Fittings								
4.1 Reflector								
4.2 Louvers/Perspex cover								
4.3 Suspension rod								
5. Exhaust Fans								
5.1 Speed and noise								
5.2 Louvers								
5.3 Connecting wires i/c. ceiling rose								
6. Call bells								
6.1 Bell push								
6.2 Connecting wire								
6.3 Ball Buzzer								
7. Sub distribution boards/BDB/Main Board								
7.1 Switch covers								
7.2 Fuse Kit Kats								
7.3 Earth connection								
7.4 Fuse rating								
7.5 Inter connection								
7.6 Boards								

(c) Inspection of buildings/gardens

(A) LAWN :

i) Weeding

ii) Patch repair

iii) Renovation

iv) Regressing

(B) HEDGE :

i) Gap filling

ii) Replacement

(C) PRUNNING & TRAINING

i) Naturally required pruning

ii) Pruning 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

(F) ROAD SIDE PLANTATION

i) Gap filling Nos.

ii) Trimming, pruning

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

DRAFT ALLOTMENT LETTER

No._____ Allotment/Immediate

Shivaji University, Kolhapur

Establishment Department Dated the

To

_____

_____

_____

Dear Sir/Madam,

The marginally noted residence is hereby allotted to you in accordance with the provision of the 'Allotment of Govt. residences under the Central Rules, 1981. This allotment is made for the . period you remain attached to ..... Division and function as .....in charge of .....Section/Sub-Division/Division.

I. Particulars of residence 2. Type

3. In lieu of unfurnished residence 4.Type

5. Furnished

2. You are requested to send your acceptance within 5 days from the date of receipt/ issue of this letter. The acceptance should be in the enclosed form in duplicate and should be addressed to the undersigned (by name).

3. If no acceptance is received within the prescribed period of 5 days, the allotment will be deemed to have been refused and your case will be deemed to have been refused and your case will be dealt with accordingly.

4. If you are a temporary Govt. servant, you are required to furnish a surety bond from a permanent Central Govt. servant along with your acceptance. The bond should be on the

5.1f the allotment is accepted you should take possession of the allotted residence from the CPWD Enquiry Office concerned within 8 days of the date of receipt of this letter. In case of failure to take the possession within the time specified above, you will be liable to pay license fee with effect from the $8^{1}{}_{h}$ day and the allotment shall be liable to cancellation.

Yours faithfully

Deputy Registrar (Establishment)
Shivaji University, Kolhapur
Dated,

Copy forwarded to :

.....Sub Division.

Cashier .....Division/Bill Asstt.

Accountant,..... Division

Annexure - 9

DRAFT ACCEPTANCE LETTER

Shivaji University, Kolhapur

Establishment Department

Sub: Acceptance of Residential Accommodation. Sir,

I accept the allotment of residence

No .....made to me vide your letter No ..... dated received by me on ..... (dated).

Full details of my emoluments are given below :

i)	Pay	Rs .....
ii)	Special Pay, if any	Rs.....
iii)	Pension, and pension equivalent of Death-cum-Retirement gratuity.	Rs. .....
iv)	Dearness Pay, if any.	Rs .....
v)	City Compensatory Allowance	Rs.....
vi)	Any other allowance other than Dearness Allowance, Conveyance allowance, House Rent etc.	Rs.....

Total

Rs.....

I am a quasi permanent/permanent Central Govt. servant.

I am a temporary Govt. Servant and particulars of my Surety are given below

i) Name of surety .....

ii) Designation of Surety .....

iii) Office/Ministry where employed.

No other Govt. accommodation is allotted to me or to my Wife/Husband to date, either by the Directorate of Estates or by the Department of Rehabilitation or by any other Govt. Deptt./Autonomous body/Semi Govt./Public Undertaking Office.

I certify that I do not own a house or flat in the station of posting either in my own name or in the name of my wife/husband or any other member of my family. I also undertake to inform you if and when I or any member of my family acquire a house at this Station.

I agree to vacate the quarter within two weeks of my transfer from the present post, without. waiting for a formal allotment in general pool or otherwise.

I have carefully read the Rules regarding Allotment of Govt. Residences at the disposal of Shivaji University, Kolhapur to its Employees and hereby agree to abide by these rules.

Yours faithfully

Signature Name in Block letters Designation

.....Date.

Annexure - 10

SURETY BOND

I, Shri ……..……..…….…….. son of Shri ..... . employed as ..... In the .....hereby stand surety, which expression shall include my heirs, executors and administrators to the President of India (hereinafter call the Govt.) (which expression includes his successors and assignees) for payment of Shri ……..…….…….. of licence fee and other dues in respect of the residence now allotted to him by Govt. as also for any residence, addl. Accommodation, extra servant quarter for garages that may be allotted to him from time to time by the Government.

2. 'I, the surety, shall indemnify the Govt. against all loss and damages until delivery of vacant possession of the same is made to the Govt. I, the Surety, hereby undertake to pay to the Govt. forthwith on demand by Govt., and without tenure all such sums as may be due to the govt., as aforesaid and I hereby agree that the Govt., sh3.Il be at liberty (and be hereby irrecoverably authorized to do so) to recover the said sums from the salary payable to me and the decision of the Govt., as to the amount so to be recovered shall be final.

3. The obligation undertaken by me shall not be discharged or in any was affected by an extension of time or any other indulgence granted by the govt. to the said, Shri .....(name of allottee) or by any other matter of thing whatsoever which under the law relating to sureties would but for this provisions have the effect of so releasing me from my such liabilities.

4. This guarantee shall not be discharged by my death nor shall it be recoverable by me at any time, except with the consent in writing of the Government, until the delivery of vacant possession of any such residence servant quarter or garage, which is in occupation of the allottee of the Government quarter.

5. Provided, however, that this guarantee shall inso-facto terminate from the date Shri..... is declared permanent or quasi-permanent in any service in the Government of India.

The Govt. have agreed to bear the stamp duty, if any, for this document. Signed delivered by said. . . . . .

at New Delhi the day of .....

(Signature of Surety)

Signature, address & Occupation of Witness

Designation.....

Annexure - 11

INSPECTION LIST NO. 1

Substation equipments, Generating Sets, Supply Co., Service Connection.

Place

Date of Check Name of JE(E)

Time of start

Time of completion

Division No

H.S. Voltage

S.No. Item

SUB STATION EQUIPMENTS	Position	Remarks
1. General look of HT panels		
2. How many incoming and outgoing panels?		
3. How many in 'ON' position?		
4. When were the contracts checked last?		
5. When was the oil tested/replaced?		
6. When were the Relays Calibrated/tested?		
7. General cleaning of panel		
8. Functioning of Meters in panel		
9. If trickle charger is provided, state of the same and battery and Maintenance of Battery.		
10. Is there alternate Source of Supply and if so when was it tested?		
11. Has DESU/NDMC been informed in advance of the programme/function?		
12 Are the voltage and supply and frequency within Limits of IE Rules. If not, any intimation given to supply Co.?		
13 No. and capacity of transformers?		
14 How many of them are in operation at a time?		
15 How often the transformers are switched 'ON' and 'OFF'?		
16 How often the tap changers have been used?		
17 When was the oil tested and if found not in order.		
18 General condition of transformer i/c oil leakages if any?		
19 How often the transformer is cleaned?		
20 Oilleve1 check		
21 Silica Gel check		
22 Bucholtz Relay check if provided		
23 Heating/Temperature Rise		

GENERATING SETS (SAND BY SUPPLY)

	Yes/No	Date
Change-over switch operated checked (weekly)		
Cable terminals connection checked		
Cleaned/checked all terminals(weekly)		
Generator operated		
On no load		
On connected loan		
Driving/V- belt checked		
Radiator filled/no leakage		
Filters clean		
HSD oil tank full		
Mobil oil checked		
Battery fully charged		
Terminal checked		
Distilled water checked		
AMF panel-relays contacts, terminals		
Checked and for its operation. Stand by water filing arrangement is available		

Annexure- 12

INSPECTION List NO. 2

Electrical installations, lifts, water supply pumps, sewage pumps, Filtration Plants.

Place:

Date of check :

Name of JE(E) :

Name of AE (E):

Division:

'A' Electrical Installations :

S. No.	Position	Remarks
1. Power outlets for metal detectors		
2. Power outlets for PA system		
(i) Normal		
(ii) Standby		
3. Power supply for AIR/Doordarshan		
4. Power outlet for car call system		
5. Power supply for security lights.		
(i) Main		
(ii) Stand by		
6. State of		
(i) Lamps		
(ii) Fittings		
(iii) Fans/Regulator		
(iv) Power/Light socket outlets		
Whether alternate source of supply available?		
All cables test for insulation & healthiness		
from substation to feed pillar/outlets.		
9. (i) Cable connections, terminals checked.		
(ii) Overheating at joints?		
10. Sub Distribution Boards checked for		
(i) Cleanliness		
(ii) All MCBs/MCCBs in working order		
(iii) Neutral/earth properly connected		
(iv) Signs for overheating/sparking		

'B' Lifts

1. No. of Lifts
2. Make/Passenger capacity
3. Type (manual/automatic with or without Attender)
4. Type of control
5. No. of floors served
6. Whether under comprehensive/service

Name of Firm:

7. Operation
(i) Landing call buttons
(ii) Car buttons
(iii) Emergency stop

8. Functioning of all safety devices
9. Car light/fan
10. Intercom working & checked — Car to M/c Room; Car to Control Room; Car to JE Room
11. Condition of rope (s)
12. Condition of trailing cable
13. Condition of sheave
14. Governor functioning
15. Smooth/Jerkfee operation
16. Levelling accuracy
17. Doors opening key availability
18. Overload safety for Car
19. Last servicing done in machine room. Date
20. Proper illumination in the lift shaft
21. Seepage in the lift pit
22. Condition of Buffers
23. Working of limit switches
24. Proper lighting ventilation in M/c Room & proper approach
25. Proper illumination at all car landing
26. Operation of controller
27. Operation of floor detector
28. Whether switch available in the car to prevent any unauthorized person from operating the Lift in the case of attendant operated Lifts.

'C' Water Supply Pumps

1. No. of Pumps — (i) Electric Drive; (ii) Diesel Drive
2. Make, H.P. of each
3. Rated current
Current actually drawn
4. Voltage at terminals
5. Type of starter
6. Foot Valve O.K.
7. Priming arrangement
8. Condition of flexible coupling
9. Greasing of bearings
10. Vibration of Motor
11. Overheating of Motor
12.No. of hours normally run
13. Sump water level indicator
14. Pressure at pump delivery

'D' Sewage Pumps

1. Type of Pump
2. Make
3. H.P./rated current
4. Current actually drawn
5. Type and condition of Starter
6. Last service on:

'E" Filtration Plants

1. Type of Plants
2. Make
3. Medium used for filtration
4. Frequency of change of filter medium
5. Motor H.P./rated current

Annexure- 13

HANDING /TAKING OVER OF BUILDINGS & SERVICES

FORMAT FOR HANDING OVER/T AKING OVER OF COMPLETED BUILDINGS INCLUDING SERVICES

1. Name of work/location
2. Salient details of the building
   a) Type of Structure
   b) Plinth area-floor wise
   c) Type of Foundation
   d) Special treatments/linings
   (i) Acoustic treatment
   (ii) False floors
   (iii) Special type of flooring
   (iv) False ceiling
   (v) Vapour barrier treatment
   (vi) Under deck/Over deck insulation

W*IS* and Sanitary installations

(a) Water Supply
(i) Sources of W/S to the building and source wise capacity
(ii) Brief specification of W*IS* distribution system

(b) Details of tube wells if any
(i) No. of tube wells
(ii) Yield of each tube well
(iii) Type of boring and depth
(iv) Brief specifications of boring pipes

(c) Type of w/s distribution
(i) OH tank details like material, lining, height, capacity etc.
(ii) W/S Sump details like material, Depth,capacity etc.

(d) Sewerage System
(i) Specification of Sewerage System
(ii) Out fall of Sewerage System
(iii) Sewage Sump details if any
(iv) Sewage treatment plant details if any

4 Electrical and Air Conditioning System
(i) Details of internal electrical installations like wiring etc.
(ii) H.T. and L.T. Pannels details
(iii) Type of fans
(iv) Whether the building is centrally Air Conditioned.
(v) A.C. Load
(vi) Type of plant
(vii) Brief specifications

5 Firefighting/Fire alarm system
(i) Type of firefighting system
(ii) Type of fire alarm

(iii) Location of control room
(iv) Brief specification of firefighting system
(v) Brief specification of fire alarm system
(vi) Fire tank capacity
(a) Over Head tank
(b) Under Ground tank
(vii) No. of fire hydrants
(viii) Fire pumps no.,& Capacity.

6 Details of Guarantee/Warranty
certificates obtained for building
for various services/treatments

7 Contract details
(a) Name of the building
contractor & Address
(b) Agreement
(c) Completion period
(i) Commencement date
(ii) Date of completion
(d) Approximate completion cost
(a) Building
(b) W/S and Sanitary
(c) Electrical and Air-conditioning

8. Major defects noticed at the time
of handing over/taking over
(a) Building work
(b) W*IS* and Sanitary installations
(c) Electrical and A/C works

9. Handing over of Completion drawings(4 sets of each)
(a) Architectural Drawings Nos.
(b) Structural Drawings Nos.
(c) Water Supply, Sewerage & Drainage
Drawings Nos.
(d) Electrical & *AIC* drawings Nos.

Handed over
Signature:
Name:
Designation

Taken over
Signature:
Name
Designation:

Annexure - 14

MAINTENANCE NORMS, FREQUENCY OF APPLICATION OF FINISHING ITEMS

S.No.	Item	Periodicity				
		Res. Bldg.	Office Bldg.	Hospitals	Laboratories	Schools
1	2	3	4	5	6	7
	White Washing/Colour washing	2 Years	2 Years	2 Years	2 Years	2 Years
2	Applying dry distemper	2 Years	2 Years	2 Years	2 Years	2 Years
3	Painting with plaster paint, Synthetic enamel paint, Oil bound distemper, acrylic paint, acrylic distemper	3 Years	2 Years	1 Year- Corridor O.T. Rooms 2 Years- Other areas	2 Years	3 Years
4	Painting external surface with water proofing cement paint	3 Years	3 Years	3 Years	3 Years	3 Years
6	Cleaning and disinfecting of water storage/distribution tanks, water mains.	6 months	6 months	3 months	3 months	6 months
7	Cleaning of Manholes/Gully chambers/ inspection chambers and flushing of building sewers	I year	1 year	6 months	1 year	1 year
8	Cleaning of storm water drains	1 year	1 year	1 year	1 year	1 year
9	Painting steel water tanks ins1de with bitumastic paint.	2 years	2 years	1 year	2 years	2 years
10	Polishing wooden doors/ windows with sprit polish/ Polish/synthetic acrylic polish.	5 years	5 years	5 years	5 years	5 years
11	Text mat or poly mat based equivalent synthetic silicon based exterior paint.	5 years	5 years	5 years	5 years	5 years
12	Cleaning Electrical installations, fans etc.	1 year	1 year	1 year	1 year	1 year
13	Premix, Semi dense/dense Carpeting of roads.	5 years	5 years	5 years	5 years	5 years
14	Collection of water samples for physical, Chemical and Bacteriological analysis of water	6 months	6 months	3 months	6 months	6 months