



**Swami Ramanand Teerth Marathwada University,
Nanded
(Maharashtra State) India**

**Policy on Physical Infrastructure and its
maintenance**



POLICY ON PHYSICAL INFRASTRUCTURE & IT'S MAINTENANCE

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POLICY ON PHYSICAL INFRASTRUCTURE & IT'S MAINTENANCE

1 Preamble

As a pre-eminent university in India, driven by the pursuit of knowledge and innovation, based upon the values the university espouses, the Swami Ramanand Teerth Marathwada University (hereafter referred to as the SRTMU) has adopted this *Policy on Physical Infrastructure & it's Maintenance*

2 Objectives of the policy

With this policy the SRTMU wishes to:

- enable the SRTMU Council to ensure that new infrastructure is developed in accordance with strategic objectives, that existing building space and other related infrastructure are optimally utilized, and that all Physical Infrastructure & it's Maintenance is effectively managed and maintained;
- assist managers and other employees in establishing a sound control environment and limiting the risks involved in performing their duties;
- ensure the uninterrupted use of facilities;
- To ensure the proper maintenance of the assets of the SRTM University as captured in the Asset Register.
- To benchmark the maintenance management approach of the SRTM University in the relevant Government guidelines.
- The policy will only apply to the on-going maintenance of assets, and excludes any capital renewal expenditure.
- The policy will be reviewed annually.

3 Policy application

This policy applies to all Physical Infrastructure & it's Maintenance owned or operated by the SRTMU, whether for teaching and learning, research, student accommodation or any other operational or non-operational purpose.

The policy is supported by all the relevant legislation applicable to the University and regulations issued in terms of such legislation, other relevant SRTMU policies, as well as technical standards and norms adapted by the University.

4 PURPOSE

This policy describes the maintenance responsibility for facilities, equipment and infrastructure when maintenance is required and how it is performed. It also defines the terms used, describes the decision making process governing the assignment of maintenance priorities, the selection of cost analysis processes, and quality assurance.

5 **ABBREVIATIONS**

Term	Description
CMMS	Computerized Maintenance Management System
MC	Management Council
B&WC	Building Works Committee
IIMM	International Infrastructure Management Manual (2006)
KPI	Key Performance Indicator
CAC	Common Account Code
NIMS	National Infrastructure Maintenance Strategy
O&M	Operation and maintenance
MUA	Maharashtra University Act 2016

• **DEFINITIONS**

Term	Description
Asset Life-Cycle	The cycle of activities that an asset goes through – including planning, design, initial acquisition and/or construction, cycles of operation and maintenance and capital renewal, and finally disposal.
Availability	The proportion of total time that an asset is capable of performing its intended functions.
Benchmarking	The process of comparing the performance of with other municipalities, as well as leading practice in order to identify performance gaps.
Condition-Assessment survey	Maintenance performed as a result of the condition of an asset. Condition based maintenance is a type of planned maintenance activity. Periodic inspections used to determine their current condition and any estimated cost to correct deficiencies.
Corrective maintenance	Maintenance actions performed as a result of failure of an asset including the modification or re-design of the asset.
Deferred maintenance	1.) Any scheduled maintenance that is not performed on schedule, unless it is determined from the material condition of the equipment that the scheduled maintenance does not have to be performed until the next scheduled maintenance. 2.) Any non – scheduled maintenance that would render the property or equipment non – operational and is not scheduled and performed in a reasonable time. In either case, circumstances such as, but not limited to, non – availability of parts or funding would be considered reasons for reporting the maintenance as deferred maintenance activities that were not carried out.
Maintenance	Maintenance is the act of keeping assets in acceptable condition or at a prescribed level of performance. It includes preventive maintenance, other types of maintenance, and replacement of parts of components and other activities needed to preserve the asset so that it continues to provide acceptable services and achieves its expected life. Maintenance excludes

	activities aimed at expanding the capacity of an asset or otherwise upgrading it to serve needs different from or significantly greater than, those originally intended
Maintenance Plan	Information, policies and procedures for the optimal maintenance of an asset or group of assets.
Maintenance Standards	The standards set for the maintenance service, usually contained in preventative maintenance schedules, operation and maintenance manuals, estimating criteria, statutory regulations and mandatory requirements, in accordance with the maintenance outcomes.
Operation	The process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.
Planned maintenance	Planned maintenance falls into three categories: 1. Periodic – Activities necessary to ensure the reliability or to sustain the design life of an asset. This includes the regular services required for certain assets. 2. Predictive – Condition monitoring activities used to predict failure. 3. Preventative – Maintenance that can be initiated without routine or continuous checking and is not condition-based.
Maintenance / Refurbishment	Actions that will restore or maintain the originally assessed future economic benefits or service potential that an entity can expect from an asset and is necessary for the planned life to be achieved.
Reliability Centred Maintenance	A structured process to determine the maintenance strategies required for an asset to ensure that it continues to fulfil its intended functions within the current operating context.
Routine maintenance	Day-to-day operational activities to keep the asset operating and which form part of the annual operating budget.
Run-to-Failure	A maintenance strategy where no routine maintenance is performed and the asset is used until it fails.
Service maintenance	Service undertaken seasonally or annually to enable the required level of service to be delivered. Service maintenance is a type of planned maintenance activity.
Unplanned maintenance	Corrective work required in the short-term to restore an asset to a working condition.

6 Policy statement and requirements

6.1 Physical Infrastructure & it's Maintenance guidelines and procedures

This Policy must be read in conjunction with the SRTMU's latest infrastructure guidelines and procedures instituted in accordance with this policy.

6.2 Physical Infrastructure development & it's Maintenance

6.2.1 Infrastructure planning

1. An annual infrastructure plan must be presented for approval by the SRTMU Council.
2. The plan should respond to short-term, medium-term and long-term Physical

Infrastructure & its Maintenance requirements, supporting other SRTMU strategic plans. Requirements pertaining to additional academic space and research space must be motivated in accordance with the SRTMU Enrolment Plan, strategic plans relating to the size and shape of the University, teaching and learning plans, and approved research plans, while requirements for non-academic space and/or general infrastructure must be motivated in accordance with formal strategic plans by support departments. Requirements relating to additional space requirements by income-generating entities must be motivated in accordance with business plans as approved by the SRTMU.

3. The construction of new facilities may only be considered after a formal review has confirmed that required additional space cannot reasonably be accommodated within the existing infrastructure.
4. Scheduled macro-maintenance plans, as well as plans to address possible large-scale deferred infrastructure maintenance, should be included as part of the plan.
5. The plan must be complemented by drawings indicating the long-term land use for all of the University's main campus properties, defining a flexible urban-design framework.

6.2.2 Approval of infrastructure projects

1. Based on the infrastructure plan, the Institutional Management will recommend a list of new developments/redevelopment projects, macro-maintenance and deferred maintenance projects to the Assets Committee and Finance Committee for evaluation as part of the annual budget process.
2. All projects relating to new infrastructure, additions and alterations and demolition of existing infrastructure must be approved by the SRTMU Council prior to commencing with final technical designs, procurement of tenders and construction work.

The following exceptions apply:

- Designated management committees have the authority to approve minor building alterations in accordance with the schedule of authorities and the approved budget allocations for minor building works;
 - Urgent requests for unscheduled infrastructure projects may be approved in accordance with the latest Schedule of Authorities issued in terms of the Financial Policy of the SRTMU, subject to the condition that the projects must be approved as a matter of urgency to mitigate specific operational risks, and subject to the condition that such adhoc projects will be financed by external funding or capital funding already approved by the SRTMU Council as part of infrastructure provisions.
3. In the event where the project scope changes significantly in relation to the approved scope during the planning and design phases of a project and the change in scope affects the approved budget of the project by more than 10%, the project must be referred back for re approval.
 4. Budgets for macro-maintenance projects and deferred maintenance projects must be approved by the SRTMU Council as part of the budget process prior to the procurement of tenders and commencement of maintenance work.

6.3 Infrastructure design and construction

1. The Institutional Management of the SRTMU will formally designate a department within the SRTMU to manage all infrastructure projects. This department will be responsible for the design and the completion of works, ensuring that projects are completed within the project budget and time frames, and in compliance with safety, technical and legislative requirements.

2. Final infrastructure designs and construction work must comply with all legislation, inter alia the following:
 - Compliance with South NBC Code (latest amendments);
 - Compliance with the SRTMU Preambles for Construction Work (2011, including latest revisions);
 - Compliance with the Occupational Health and Safety Act, as well as supportive Regulations, issued in terms of the Act;
 - Compliance with applicable Local Governmental ordinances;
 - New buildings must provide people with disabilities reasonable access to facilities in accordance with PWD & UGC norms;
 - New facilities must complement the aesthetics of adjacent structures and be designed in a functional manner, allowing for ease of maintenance, considering environmental stewardship and sustainability.

6.4 Infrastructure space management

6.4.1 Ownership of building space and related space

In accordance with this policy, all building spaces and related infrastructural spaces are considered to be allocable University property and are subject to assignment and reassignment to achieve optimal utilization. The allocation of any space does not imply permanence, but is rather subject to on-going review and where strategically justified, re-assignable in accordance with the Infrastructure Plan.

6.4.2 Allocation of building space

The following principles are applicable to the allocation of building space:

- In order to ensure equitable and transparent space allocation practices, the allocation of space will be governed by The PWD & UGC Norms.
- Where possible, the "shared space" principle must be implemented to ensure the optimal use of facilities and to minimize facilities-related operating costs;
- Faculties/Departments must as far as possible be consolidated into contiguous space.

6.4.3 Renting out of building space and other infrastructure

Surplus space will only be leased to outside entities if a formal review confirms that there is no internal space needs for the space in question during the lease period.

Internal stakeholders must be consulted prior to the conclusion of a lease agreement with an outside entity in order to ensure that the leased space complies with its intended use.

6.4.4 Space Charges

1. University entities generating outside income have to make a financial contribution for the use of facilities to at least cover direct facilities-related costs such as maintenance, cleaning, insurance, etc.
2. Faculties and departments (including support departments) should be charged for space occupied.
3. Space charges should be set in advance and published for reference as part of the annual budgetary process.

6.4.5 Space administration, reporting and control

1. A central register of space data must be maintained in order to assist the management of the University in making informed decisions regarding the effective management of space.
2. Regular facilities utilisation evaluations must be conducted in order to account for the appropriate utilisation of space in accordance with the University's Strategic

Plans and space allocation norms.

6.5 Maintenance of Physical Infrastructure

6.5.1 Integration of maintenance processes

Infrastructural improvements to all properties owned by the University must be effectively and efficiently maintained in order to support operational efficiency, as well as to ensure sustained use, occupational health, safety and financial viability.

An integrated maintenance approach must be followed, incorporating breakdown maintenance, preventative maintenance, condition-based maintenance and macro-maintenance processes, into a single maintenance plan, ensuring that facilities and services infrastructure are maintained to an optimum level, preventing asset deterioration.

6.5.2 Breakdown maintenance

Reactive breakdown maintenance must be carried out on an "as and when required" basis, ensuring that occurring defects are rectified as a matter of urgency to prevent possible interruption in the use of a facility, to prevent resultant further damage to infrastructure, as well as to address health, safety or security risks caused by a defect.

Services must be provided on a 24-hour basis in order to attend to after-hours emergencies.

6.5.3 Preventative maintenance

Preventative maintenance programmes must be implemented and complied with to ensure the short-term and medium-term scheduled servicing of all serviceable equipment, building systems, building finishes,

Structural components and infrastructural services at regular intervals to obtain the maximum useful life from each physical asset before replacing it. The objective of such programmes will also be to prevent unnecessary breakdowns and asset failures, as well as to prevent high maintenance costs related to deferred maintenance.

Records of maintenance schedules must be kept, indicating the scope, scheduling and actual execution of all preventative maintenance programmes.

6.5.4 Condition-based maintenance

Regular inspections must be carried out to identify all defects to structures, building finishes, infrastructural services and fixed equipment. The identified defects must be rectified, while records must be kept of all defects that have not been rectified (deferred maintenance).

6.5.5 Macro-maintenance

Macro-maintenance programmes must plan and affect the scheduled long-term and large-scale renewal of outdated building finishes, as well as the long-term replacement of building or infrastructural components with a maximum life expectancy of ten years.

Neither deferred maintenance nor the installation of additional services, equipment and fixtures may be financed from macro-maintenance budgets without the approval of the Executive Director Finance and Facilities.

6.5.6 Deferred Maintenance Projects

Where necessary, special deferred maintenance projects must be initiated to address the backlog in maintenance work, as well as to rectify maintenance work that has not been carried out according to required standards.

Independent control measures must be maintained to monitor and report on the levels of deferred maintenance on all campuses and properties owned by the University.

6.5.7 Maintenance Budgets

Operational maintenance budgets must be prepared as part of the annual budget cycle, including forecasts for breakdown maintenance and estimates for preventative maintenance.

Macro-maintenance budgets, linked to macro-maintenance programmes, as well as cost estimates relating to deferred maintenance work, must be included in the Infrastructure Plan.

6.6 Energy management

Energy use in all facilities of the University should be measured and monitored on an on-going basis, quantifying consumption and identifying and reporting on significant and abnormal energy use.

Where practical and feasible, new technologies should be implemented to reduce energy consumption, minimize electricity usage and improve the efficiency of equipment.

Back-up electricity-generating plant must be operated and maintained to ensure electrical supply essential for critical installations in the event of interrupted electrical supply from Eskom or the local authority.

6.7 Legislative safety of machinery and electrical installations

In order to ensure that the provisions of applicable safety acts and supporting regulations issued in terms of such acts are complied with, a competent person must be designated in a full-time capacity as the "Responsible Person" for the safety of machinery and electrical installations on all campuses. The appointment of such person must comply with statutory requirements and such person must be registered with the Department of Labour.

7 Delegation of responsibilities

Responsibilities may only be delegated to qualified persons, who are actively involved in the tasks being performed, have the appropriate knowledge (including but not limited to relevant regulations and policies), technical skills and authority to carry out responsibilities.

8 Compilation of maintenance management plan

8.1 In terms of the Maintenance Management Policy, maintenance management will be compiled for all services included under the policy. The Maintenance Management Plans will address the following 5 aspects:

- (a) Establishment of asset maintenance operational plans;
- (b) Preparation of asset maintenance budgets;
- (c) Establishment of an asset maintenance organization.
- (d) Establishment of asset maintenance systems; and
- (e) Establishment of asset maintenance performance norms and standards and reporting mechanisms.

9 Preparation of Asset maintenance Budget

- The costs associated with the maintenance activities in the Maintenance Activity Plan must be calculated.
- The individual maintenance activity costs must be summarised per department and used to inform the required maintenance budgets.
- Where available maintenance budgets are inadequate, the criticality of the individual activities will be used to priorities the maintenance actions to be performed.
- Maintenance activities that cannot be funded will be classified as deferred maintenance and recorded as such.
- Expenditure on maintenance will be recorded against the assets, facilities and cost centers where the cost is incurred.

10 Establishment of Asset Maintenance System

10.1 The maintenance activities will be scheduled and controlled using an appropriate system(s), such as a CMMS.

10.2 The maintenance system(s) must include the following functionality:

- i. Recording of progress against activities and activities closed or re-programmed.
- ii. Recording of maintenance costs, time and other resources consumed against assets and facilities;
- iii. Include links to the financial management system so that reconciliation of maintenance budgets can be done;
- iv. Built-in maintenance analysis tools or ability to export information to other applications, to enable maintenance analyses to be undertaken; and
- v. Analysis of asset performance to be used as an input to maintenance planning.

10.3 A link will be established between the Maintenance Management System and the Customer Complaints System (EMIS), which is one of the main originating points for unplanned maintenance activities.

11 Undertake Asset Maintenance Operational Planning

11.1 Asset maintenance operational planning will be undertaken for all assets covered by this Policy with due consideration of the following:

- i. Definition of maintenance outcomes;
- ii. Conducting a maintenance analysis for all assets, including:
 - identification of all assets;
 - Identification of critical assets based upon the risk of failure to the SRT University ;
 - Analyzing the maintenance options and determining the preferred option in terms of the lowest life-cycle cost.
- iii. Development and implementation of a maintenance operational plan;
- iv. Analysis of asset performance.

11.2 Maintenance outcomes

- i. Maintenance outcomes must be agreed and documented for every service.
- ii. The maintenance outcomes must be documented for each of the following categories:
 1. Statutory compliance, e.g. adherence with outflow quality requirements;
 2. Availability of the service, e.g. time taken to restore service after a disruption;
 3. Reliability of the service, e.g. the number of times within a period that consumers do not have access to the service;
 4. Cost of maintenance; and
 5. Risk management.

11.3 Maintenance analysis

(a) Identification of assets

- i. The existing asset register will be used as the basis for the identification of all assets, and care will be taken to update the register to reflect any new assets created, retired or changed in any way.
- iii. Assets will be grouped into categories for which the maintenance actions are similar.

(b) Identification of critical assets based upon the risk of failure to the SRT University

1. Assets will be evaluated to determine the consequence of failure with regards to the following impacts:
 - a. Environmental impact;
 - b. Public health & safety impact;
 - c. Financial impact; and
 - d. Service delivery impact.
2. The impact with regards to each of the criteria will be rated using a 5 point scale.
3. The individual ratings will be combined into a combined rating, which will be used to identify the relative criticality of maintaining specific assets.

(c) Analysing the maintenance options and determining the preferred option in terms of the lowest life-cycle cost.

11.4 Maintenance operational plan development

(a) The maintenance activities for each asset group defined will be combined in an activity maintenance plan that will list the following:

- i. Description of the asset in sufficient detail for the accurate identification of the asset
- ii. Description of the type of activity to be performed, e.g. testing, inspection, oil change etc.;
- iii. The criticality of the activity and The base period of the activity, e.g. monthly, annually etc.

(b) Maintenance activities recorded in existing documents will be incorporated into the activity list. These include:

- i. Activities recorded in current checklists and operating manuals; and
- ii. Others as identified.

11.5 Analysis of asset performance.

(a) Tools will be used to monitor the performance of assets, where it is appropriate for such tools to be employed. These could include:

- a. Root Cause Analysis tools to assess the underlying reasons for asset failure;
- b. Undertaking Reliability Centered Maintenance assessments; and
- c. Others as identified.

12. GENERAL

The maintenance activity schedule will be used to inform the maintenance organisational structure required to perform the critical work to be executed.

The maintenance activity schedule will also be used as the basis to determine the tools and other equipment required to perform the required maintenance.

The outsourcing or use of alternative delivery mechanisms to perform tasks, or groups of maintenance tasks, must be considered as an alternative.

New Equipment

If equipment is new to the inventory, manufacturer's recommendations in respect of maintenance should be used. However, if similar equipment exist, an option between experience based on historical maintenance information and manufacturers suggestions could be used, if it not impact or influence on the manufacturers product warranty conditions.

Spare Parts

At the time of procurement of a new piece of equipment requiring maintenance, consumable and manufacturer recommended spares in sufficient quantities to initially support the equipment will be ordered. Unless the equipment already exists in the inventory, a one – year supply of spares will be procured by the purchasing work centre. If the equipment does exist in inventory, then the equipment spare parts inventory should be reviewed and spares ordered as deemed necessary.

Condition assessment surveys and life cycle costing

When an asset, having an anticipated replacement cost of more than **R25 000** approaches the end of its life – cycle, or is at a state that major maintenance or renovation is required, or required maintenance may be delayed, a condition assessment survey or a life cycle analyses shall be performed. The result of the survey of analyses should be compared to the replacement costs and expected future maintenance costs. If the result of the survey or analysis reflects a net saving of one alternative (maintenance or replacement) over another, then the lower cost alternative should be recommended.

Deferred maintenance

Deferred maintenance results in higher long – term costs. This higher cost is due to the repair cost being higher than if regular maintenance had been performed at appropriate points in the life cycle of equipment. In addition, when maintenance is deferred, the life cycle of the equipment is decreased and complete reconstruction may be necessary at an earlier date resulting in additional costs. As such, performing maintenance shall avoid deferred maintenance.

13. Responsibility for implementation, management and monitoring

The necessary organizational structures must be put in place by the Vice-Chancellor in order to delegate responsibilities for the effective implementation, management, compliance and monitoring of this policy. It will be the responsibility of delegated staff to promote the spirit of this policy, and to ensure that the policy is adhered to.

14. Enquiries

Registrar, Executive Engineer: Department of Physical Infrastructure & Maintenance and Planning.