

# National Manual of Assets and Facilities Management

## Volume 6, Chapter 23

### Landscaping & Grounds Maintenance Plan for Pavements

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## Landscaping & Grounds Maintenance Plan for Pavements

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# Landscaping & Grounds Maintenance Plan for Pavements

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# Landscaping & Grounds Maintenance Plan for Pavements

## 1.0 PURPOSE

The purpose of this document is to provide guidelines and best practices to the Entity/Service Provider for maintaining roadway aesthetics and associated landscaping facilities. In addition, its purpose extends to promote industry-accepted standards, and in order to meet the requirements of users, regular maintenance service and monitoring is required to maintain the landscaping of roadways to a standard level.

These are minimum requirements applicable to roadway landscaping facilities. The Entity shall modify the requirements specific to its maintenance needs and shall conform to the specifications detailed in Section 4.0.

## 2.0 SCOPE

This document applies to the following pavement landscaping areas:

- Highway and roads medians
- Roadside area and sidewalks
- Sloped embankments

This document contains the soft and hard landscape aspects of a roadway.

The maintenance requirements provided herein, or cited by reference, are based on the Ministry of Municipal and Rural Affairs (MOMRA) landscaping standards, international landscaping standards, and best practices that should be adopted by the relevant Entity.

This document provides the minimum requirements to be implemented by the Entity and/or Organizations to enable safety, quality, and cost-effectiveness of landscape maintenance for roadways and to meet the requisites and expectations of the relevant Entity.

The Entity and/or Organizations providing landscape works for roadways shall establish and develop set procedures for the continuous maintenance care for landscape components.

## 3.0 DEFINITIONS

Term	Definition
Emergency Maintenance	Type of reactive maintenance to rectify the danger to the public and restore serviceability. This approach prevents threats to the lives, property, profitability, or viability of an organization.
Hard Landscaping	The process of working with the type of landscape elements that uses hard materials, like stone and metals, rather than 'soft' materials (i.e., soil and planting)
Maintenance	The undertaking of preventative or corrective actions, or both, including repairs, to ensure that the condition of the asset continues to meet the required standards over the service life of an asset
Mulch	Protective covering (i.e., bark chips, straw, or plastic sheeting) placed around plants to suppress weed growth, retain soil moisture, or prevent freezing of roots
Preventative Maintenance	The planned strategy of cost-effective treatments that preserves the asset, prevents future deterioration, and maintains or improves the functional condition
Pruning	Selective removal of specific parts of a plant, tree, or vine; controlling or redirecting growth), improving or sustaining health, reducing risk from falling branches, increasing the yield or quality, no longer aesthetically pleasing, or injurious to the health/development of the plant.
Right(s)-of-Way	Land designated for transportation purposes; refers to publicly managed land on the side of the road
Routine Maintenance	Maintenance activities pertaining to regular inspections/machine servicing performed on a regularly scheduled basis.



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Soft landscaping	The process of working with landscape elements that require no construction. These elements include turf, trees, and shrubs.
<b>Acronyms</b>	
ANLA	American Nursery & Landscape Association
AOSA	Association of Official Seed Analysts
ARAMCO	Arabian American Oil Company
HSSE	Health, Safety, Security, and Environment
IPM	Integrated Pest Management
LMZ	Landscape Maintenance Zone
MOMRA	Ministry of Municipal and Rural Affairs
MOT	Ministry of Transportation
PPM	Planned Preventative Maintenance
RCJY	Royal Commission for Jubail and Yanbu
ROW	Right of Way
SASO	Saudi Arabian Standard Organization
TTC	Temporary Traffic Control

**Table 1: Definitions**

### 4.0 REFERENCES

Roadway landscaping and grounds maintenance shall be based upon the requirements of this document and existing landscape maintenance standards (to ensure interoperability, these shall be from the Saudi MOMRA or those of the authority having jurisdiction over the roadways such as Ministry of Transportation (MOT), Arabian American Oil Company (ARAMCO), Royal Commission for Jubail and Yanbu (RCJY), these shall be selectively applied based on the evaluation of individual requirements. Where the standards stipulated conditions conflict, the most stringent shall govern, unless otherwise noted herein and shall require the Entity's approval. The following are the adopted references:

- Kingdom of Saudi Arabia MOMRA, General Directorate of Operations and Maintenance (Parks Operation and Maintenance Manual)
- Saudi Arabian Standard Organization (SASO)
- Highway Manual for Sustainable Landscape Maintenance, Hawaii Department of Transportation Highway Division
- Mowing & Vegetation Management, Indiana Department of Transportation
- Landscape Plants for ArRiyadh Region, a Reference Manual by High Commission for the development of ArRiyadh
- American Nursery & Landscape Association (ANLA)
- Minimum Landscape Maintenance Specification of Services and Works, Guidelines for Urban Development, City of Whittlesea, Australia
- Landscape Maintenance Specifications Standards Manual, Nevada Landscape Association
- Association of Official Seed Analysts (AOSA)
- Environmental Protection Act 1990 (Duty of Care) Regulations
- Wildlife and Countryside Act 1981

The Entity/Contractor should also refer to the following relevant volumes/chapters/sections of the National Manual of Assets and Facilities Management for further guidance while compiling landscape and grounds maintenance plans for roadways:

- National Manual of Assets and Facilities Management – Volume 2: Asset Management
- National Manual of Assets and Facilities Management – Volume 3: Condition Assessment
- National Manual of Assets and Facilities Management – Volume 4: Financial Planning
- National Manual of Assets and Facilities Management – Volume 5: Operation Management (Chapter 14 and Chapter 18)
- National Manual of Assets and Facilities Management – Volume 6: Maintenance Management Chapter 3 Types of Maintenance



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Chapter 4 Maintenance Plans  
Chapter 13 Transportation Systems Maintenance Plans  
Chapter 14 Roads Maintenance Plans  
Chapter 21 Pest Control Maintenance Plans  
Chapter 22 Waste Management Plans

- National Manual of Assets and Facilities Management – Volume 10: Health, Safety, Security, and Environment (HSSE)

### 5.0 RESPONSIBILITIES

Role	Description
Entity and Specialized Contractors/Service Providers	<ul style="list-style-type: none"><li>• The Entity and the specialized Contractors/Service Providers should provide staff able to perform work at the highest standards of horticultural excellence</li><li>• The Entity and the specialized Contractors/Service Providers shall have an organizational structure with adequate staff with defined roles, responsibilities and competencies to effectively oversee and monitor maintenance activities/works</li><li>• The Entity and the specialized Contractors/Service Providers shall have continuous training programs for developing and maintaining staff competence</li></ul>
Staff	Key staff shall have competency in best management practices regarding safety, hazardous materials, spill response, plant health, pruning, Integrated Pest Management (IPM), pesticide application, and irrigation maintenance
Landscape Professional	All work shall be performed under the direct on-site supervision of a qualified landscape professional
Specialized Contractors/Service Providers	The specialized Contractors/Service Providers are responsible for applying all safety and traffic control measures to ensure the safety of workers, pedestrians, and drivers

**Table 2: Responsibilities**

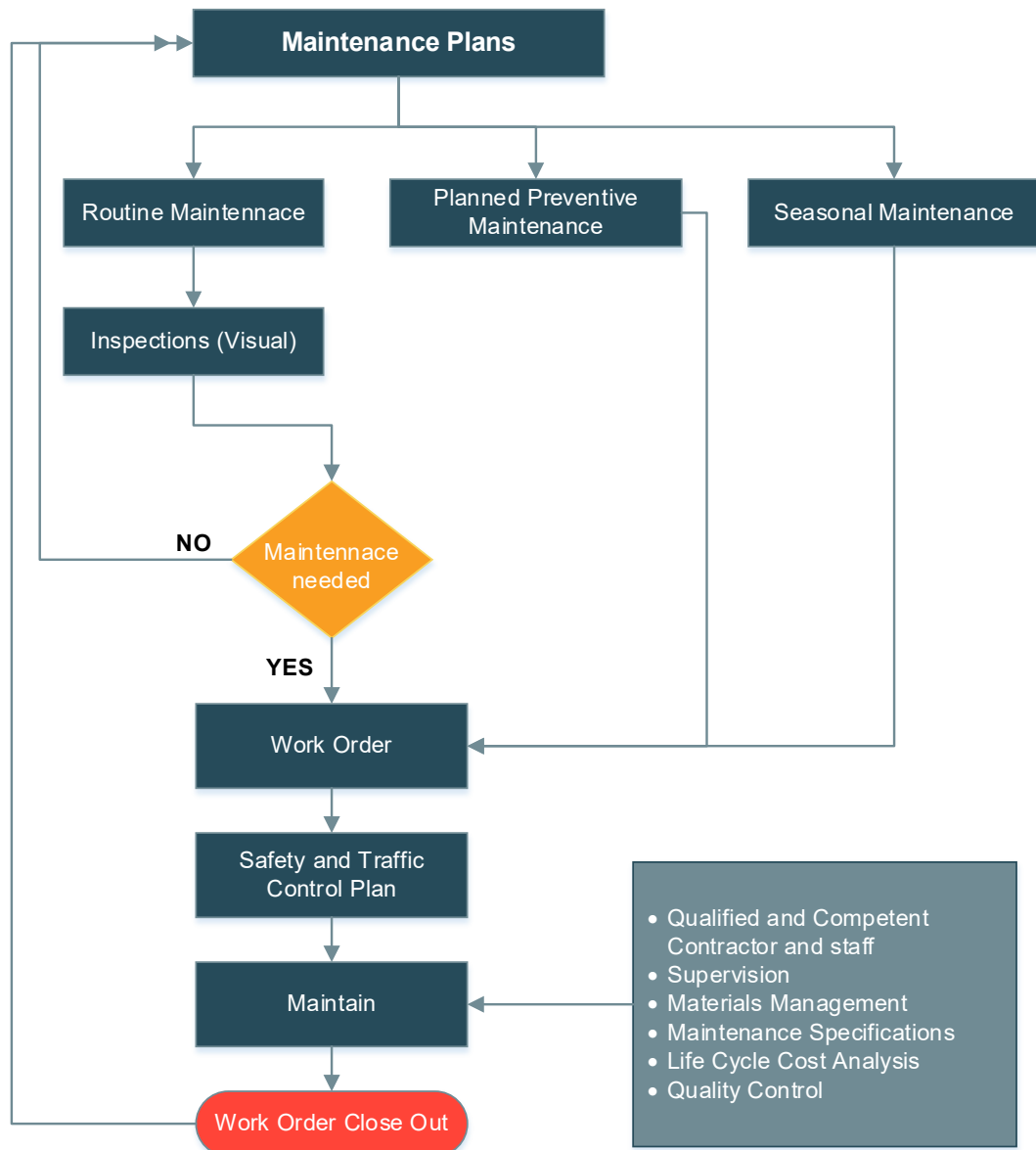
All maintenance activities must comply with existing environmental legislation, approved codes of practice, and authoritative guideline literature issued by relevant statutory bodies and Entities.

### 6.0 PROCESS

The maintenance process for the landscaping of roadways is illustrated in the process flow diagram below and described in detail in the sections that follow.



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**Figure 1: Landscaping (Roadways) Maintenance Process**

### 6.1 Roadway Landscape Maintenance

The Entity shall establish and develop set procedures for continuous maintenance and performance efficiency for landscape components pertaining to roadways. The comprehensive landscape maintenance plan shall utilize actions and strategies (i.e., routine maintenance, inspection, and Preventative maintenance activities, including effective traffic control during maintenance works).

#### 6.1.1 General Requirements

- Temporary Traffic Control (TTC) shall be in place and approved by the Entity before performing roadside landscape maintenance.
- Demarcations should be established with adjacent properties for the designation of maintenance responsibility.
- The Entity/Contractor shall replace turf or plant materials damaged as a result of improper maintenance attention or procedures. Replacement material shall be of identical size and type as





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the damaged material and plants should be replaced within two weeks from identification/frequency agreed with the Entity. Any alternatives to size, type, and scheduling of replacement can only be performed by the written permission of the Entity.

- An electronic activities log shall be maintained (i.e., schedules, additional service repairs, and documentation of each application of fertilizer, pesticide (includes herbicides), and/or other chemicals).
- Pesticides (includes herbicide) application records shall be retained in accordance with Entity requirements and standards. Records shall be completed in accordance with all applicable laws, regulations, and related procedures as provided by the Entity.
- Establish a schedule and Gantt chart (or equivalent) for regular area maintenance activities and present it to the Entity for review/approval. The Contractor shall review the proposed schedules with the Entity and adjust as necessary (to avoid conflicts).
- Maintenance shall consist of fertilization, soil building, pruning, mowing, irrigation, Integrated Pest Management (IPM), weed/insect/disease control, litter control and any other procedures consistent with good horticultural practice; this ensures normal, vigorous, and healthy growth of turf and landscape plantings.
- When performing any work requiring subsurface excavation, the Contractor shall take necessary precautions to avoid damage to existing utilities and vegetation.
- Turf shall be trimmed with professional quality mulch mowing equipment.
- The Entity/Contractor is encouraged to develop best practices by incorporating on-site recycling of organic materials (i.e., leaves and grass clippings), and the use of recycled materials for maintenance operations.
- The Landscape Maintenance Plan shall establish emergency and communication requirements to the relevant Entity, Contractor, and/or the Overseeing Organization involved with the specific landscape works.
- Health and safety requirements and risk assessment shall be in place for heavy equipment and cranes and approved by the Entity before performing roadside landscape maintenance.

### 6.1.2 Safety & Temporary Traffic Control (TTC)

The primary function of TTC is to provide for the safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment. Activities should be recorded in detail and communicated in risk and method statements accordingly. The risk of vehicular incidences is high for workers using landscaping equipment and machinery on the roadside. Vehicle traffic shall be warned with appropriate signage before approaching the designated maintenance work area. The Entity/Service Providers shall adhere to the following key safety and TTC considerations before performing roadway landscaping maintenance activities (these are minimum requirements, the Entity/service provider shall develop a comprehensive TTC plan to ensure the safety of road users and workers).

- Succinct guidelines shall be provided to the drivers as they approach the temporary traffic zone. The type and frequency of guidelines depends on the speed limit for the specific road (adjacent to the right-of-way where work is being conducted), the driver's and workers' visibility, duration, and the location of the work.
- Workers shall face incoming traffic, specifically when road edges meet the work area.
- Individuals working on the roadside shall wear appropriate Personal Protective Equipment (PPE) (the type of the safety apparel depends on the speed limit for the specific road adjacent to the right-of-way where work is being conducted).
- Landscape maintenance should be conducted during off-peak traffic hours.
- Traffic control devices shall be removed when they are no longer needed.
- Workers should wear safety goggles, sturdy shoes, and pants to avoid injuries while using power tools.
- Workers should wear approved for task gloves to lower the risk of skin irritations, cuts, and contaminants. Loose-fitting or torn clothing shall not be used.
- In order to protect workers from sunburn or sunstroke during the summer season, long sleeves, wide-brimmed hats, sunshades, and other protection measures should be utilized.
- Activities regarding working times as issued by the associated Ministries should be strictly followed. (especially during the summer months).



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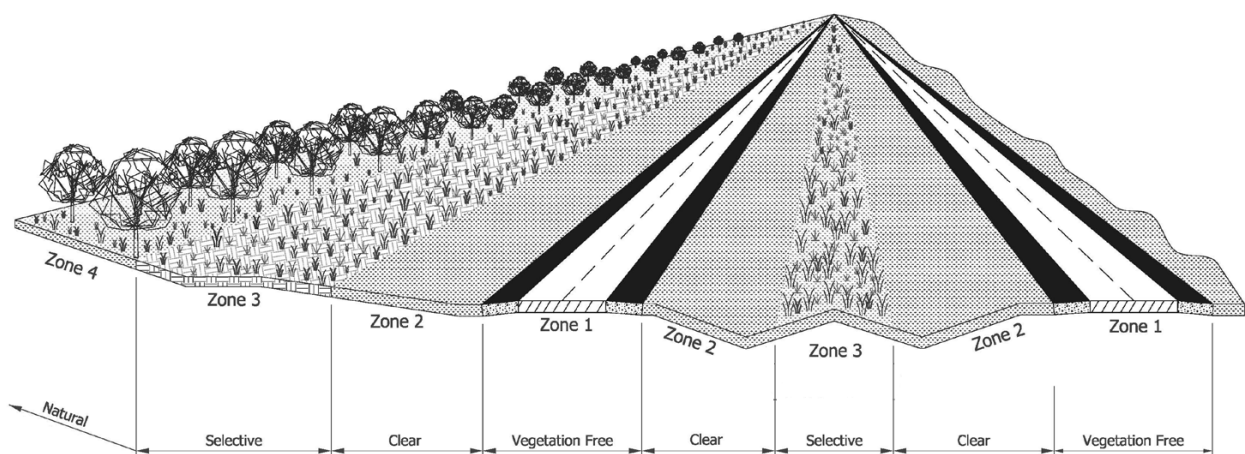
- First aid supplies shall be available on-site for all types of injuries that could transpire at the workplace, and its location shall be known to all employees.
- Only trained and authorized employees shall be permitted to operate vehicles and equipment.
- Harmful or poisonous plants shall be identified and removed immediately.
- Respiratory protection shall be used while cleaning u-waste as leaves/dust could contain animal droppings.
- Safety instructions shall be followed for any machinery use as per the manufacturer's guidelines.
- During maintenance activities, the Contractor/Entity shall consider health and safety, safe access, and egress of customers and users.
- Safeguard the health and safety of users, employees, inspectors, and members of the general public.

The Entity should also refer to the requirements detailed in Volume 10: Health, Safety, Security and Environment (HSSE) of the National Manual of Assets and Facilities Management for further guidance on HSSE requirements.

### 6.1.3 Landscape Maintenance Zone (LMZ)

The Landscape Maintenance Zone (LMZ) is the area along the roadside from the edges of the road to the surrounding land including medians. This area is the focus for landscape maintenance activities and can be divided into the following zones (Refer Figure 2):

- **Vegetation Free/ Zone 1:** This area is where pavement and traffic lanes exist and is vegetation free.
- **Clear/ Zone 2:** This area usually extends 9 meters from the edge of the roadway shoulder pavement and includes highway medians. Turf in this area should be mowed regularly, particularly in urban and high traffic volume areas. This zone should receive selective herbicide treatment for invasive and noxious plants regularly.
- **Selective/ Zone 3:** This area usually extends 9 to 24 meters from the edge of the pavement. Native plants could be allowed to develop in this area to create a natural appearance and provide a pollinator habitat. Spot mowing should be applied in this area to control invasive and noxious plants.
- **Natural/ Zone 4:** This area is located where right-of-way usually extends more than 24 meters from the road edge, it is recommended to allow native plants and vegetation to develop and serve as a defense against invasive species (will help to shield the roadway from neighboring properties).



**Figure 2: Roadway Landscaping Maintenance Zones**



### 6.2 Computerized Work Order System

The Entity/Contractor should utilize a computerized work order system for tracking purposes and maintenance activities including, but not limited to the following variables:

- Asset location and sub-location
- Personnel/Craftsman identification number, trade, and competencies
- Work Order details such as work order number, issuance/closeout dates
- Total working hours
- Maintenance costs (i.e., contractor costs, miscellaneous costs, total labor costs, materials costs, and total work order costs)
- System or equipment worked on by the maintenance worker
- Description of the task or tasks performed

The computerized work order system data can be sorted by the specific variables contained in the database and should enable Park Maintenance Managers to perform the following:

- Estimate the average time required for a work order to be completed after a request has been submitted.
- Estimate recurring costs for specific areas or equipment (i.e., replace systems or equipment instead of continuing to repair them).
- Calculate total costs for maintaining each park area or facility.
- Identify variations in costs for maintaining the same type of area or facility.
- Identify differences in labor productivity within the job classification.
- Utilize procurement tools in the software to estimate materials usage and arrange for supplies for maintenance/planting activities.

### 6.3 Routine Maintenance

The specialized Contractors/Service Providers shall visually inspect the assigned area regularly and record results on the inspection form. Routine inspections shall include, but are not limited to, the following:

- Evaluating site conditions and identify potential maintenance needs or safety hazards which require immediate attention.
- Identify excessive litter or debris, graffiti, broken or vandalized facilities, which may create a safety hazard.
- Daily schedule adjustments should be made based on the findings of these inspections.
- Perform maintenance services as required.

The specialized Contractors/Service Providers shall follow the work order procedures and set priorities to action requests for maintenance and repairs. Problem areas identified through daily visual inspections and emergency reports by the Contractor and park users should be documented. Specialized Contractors/Service Providers shall follow-up and schedule maintenance as required.

### 6.4 Preventative Maintenance

The specialized Contractors/Service Providers should perform Preventative Maintenance to avoid issues that could become a hazard to park users and result in redundant costs. The Preventative Maintenance tasks listed in Attachment 1 shall be performed as part of Preventative Planned Maintenance (PPM) by the relevant Entity. The Attachment 1 list is not comprehensive and represents a collection of typical activities. The relevant Entity/Contractor shall develop programs and activities as part of the PPM plan.

The Entity/Contractor shall adhere to the following minimum requirements while performing landscaping maintenance activities.



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### 6.4.1 Mowing

The following are the different types of mowing for road and street landscape maintenance:

- **Aesthetic Mowing:** Mostly conducted in high visibility areas (i.e., right-of-way) for beautification.
- **Safety Mowing:** Ensures that signs and traffic control devices and other safety features are visible. Ensures that drivers have sufficient visibility when approaching intersections and driving around curves.
- **Transition Mowing:** Seamless change from a narrow to a wide mowed width; this occurs when different widths of right-of-way are mowed using specific types of equipment.
- **Contour or Selective Mowing:** Naturally blend grass with vegetation planted in the LMZ. Utilized to showcase architecturally designed landscaping, decorate an interchange entrance or median in an urban area.

The following are mowing guidelines that should be considered:

- Except for the summer season, winter grass shall be mowed regularly during the spring and fall season.
- Turf shall not be mowed when wet; watering shall be stopped for 24 hours before mowing.
- Mowing shall be uniform, at a regular speed, should be conducted in parallel paths and one direction (ensure no spaces are left between the paths).
- Mowing must not be conducted until the area is inspected and cleared of all litter and debris.
- All grassed areas shall be maintained in a weed-free state before mowing.
- After mowing, all hard surfaces (i.e., footpaths and roads) shall be cleared of cut material.
- Mowing shall be conducted regularly to maintain the turf length of 2-4 centimeters (based on the growth patterns and the purpose of turf use).
- Where the grass is taller than usual, no more than one-third (1/3) of the grass length should be removed in mowing activities. Mowing shall be conducted several times to reach the optimum length of the grass.
- Slopes with a gradient less than 1:3 shall be mowed identically as mentioned above. The following measures shall be considered in mowing slopes steeper than 1:3:
  - Use a side-mounted mower on a boom (imperative to conduct activity on a flat surface and ensure even vehicle weight distribution).
  - Limit the possibility of the vehicle overturning by operating the side-mounted/boom mower on inclines.
  - Ensure that the mower has a roll-over protection structure.
  - Use seat belts all the time.
  - Where boom mowers are unavailable, use hand-held equipment designed for the task (i.e., weed eaters).
  - A Banksman should be deployed (act as a safety officer) to prevent mowing activities coming into contact with the public.

### 6.4.2 Edging

- Consider edging and trimming in urban areas where aesthetics are important. Enhance safety by maintaining sight distances and infrastructure (i.e., signs and guard rails).
- Turf edging shall be conducted in conjunction with mowing, and only approved equipment shall be utilized.
- Edging shall be conducted to produce straight and regular lines.
- Edging should ensure that grass is prevented from reaching the tree bed.
- Grass must be at the level of the upper surface of the sidewalks/about 1-2 centimeters.



### 6.4.3 Pruning

- Pruning shall not be conducted without clear objectives.
- Pruning shall be conducted for rejuvenation purposes and the removal of hazardous, broken, diseased, or deadwood from a tree/shrub.
- Ensure pruning is conducted at road junctions with clear visibility of oncoming traffic.
- Sharp and clean pruning equipment shall be utilized only.
- General pruning activities should aim to attend to the following satisfactorily:
  - Deadwood and dying branches
  - Broken and split branches
  - Weak limb structures
  - Epicormic growth, water shoots, and stump sprout the main trunk
  - Removal of spent flower heads
  - Regular trimming of hedges
  - Regular trimming of standard specimens for the desired shape
  - Seasonal pruning of herbaceous species and woody perennials
  - Maintaining sightlines in traffic treatments
  - Removal of dead plants
- Final cuts should adhere to approved arboricultural techniques. Avoid bark tearing by using under cut, top cut, and final cut.
- Pruning should be removed from the site by the developer and recycled as mulch/soil ameliorant.
- Removal of lower branches/shrubs is not a permitted method of improving the ease of maintenance of the underlying area unless the development of a clean lower trunk is part of the natural development of the relevant plant species.
- Pruning shall be conducted at a specific time of the year, based on the tree type and the pruning objectives.
- If removing branches more than 3 centimeters in diameter, the location of the cutting site shall be sealed, and an approved cover shall be utilized and painted with a sealing material (this prevents sap flow, signs of wilting, and insect and fungal infections).
- Pruning should be conducted in a manner that does not affect/damage the stem tissue of the tree.
- Palms in high traffic areas shall be pruned twice a year.

### 6.4.4 Planting

- The specialized Contractors/Service Provider should replant failed, damaged, or stolen plants as soon as practicable after identification. Planting can be performed at any time of the year, subject to ambient weather, irrigation conditions, and availability of suitable species. The majority of the planting program should be completed during late autumn to early spring (based on the species). Preparations for planting should be completed in advance of this period (i.e., stock orders to suppliers).
- Incorporate any necessary preparation and protection of plants to maximize established capacity (including adequate herbicide treatment, group plantings in prepared and mulched beds, tree guards, mulching, and weed competition control).
- Suitable protection, in the form of mulching and tree guards, is required for the planting of individual trees in open grassed areas.
- The specifications of the supplied trees should be as follows:
  - The main stems are straight, and the branches are in good condition.
  - Trees should have three of the main branches at the growth stage with adequate spacing distances.
  - The stems of the trees should be at least 1.5 to 2.0 meters long; stem length is calculated from the surface of the soil to the base of the branches.
  - The diameter of the stem should be no less than 8 to 10 centimeters, measured at the height of 60 cm from the ground.





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### 6.4.5 Mulching

- Mulch shall be maintained to an even depth not greater than 100mm and not less than 75mm (depending on the material used) to cover exposed soil on shrubs, perennial beds, and mass planted tree areas (mulch cover shall be maintained to ensure the establishment of the plants and minimal weed growth).
- Mulch shall not be cultivated/incorporated into the soil.
- Mulch is not to be stockpiled on-site for extended periods and is to be utilized within one week from delivery.

### 6.4.6 Weed Control

Weeding activities should be conducted daily; they should be removed from the roots directly with care (so as not to leave the tree pans and green areas). For further information and guidance pertaining to weed control using pesticides, refer to Volume 6 Chapter 21: Pest Control Plan for Parks & Recreation (6.21.6) of National Manual of Assets and Facilities Management. If pesticides are utilized, then the precautions outlined in the Material Safety Data Sheet must be strictly followed. Isolating areas should be considered for the general public when pesticides are utilized, and warning signs should be considered as part of the maintenance plan/Risk and Method statement.

### 6.4.7 Fertilizing

The amount and type of fertilizer required vary according to the age of the plant and the quality of the soil. There are two types of fertilizers:

- **Organic Fertilizers:** Applied in the winter season and spread at the base of the trees in a circular manner, then combined with soil and watered immediately. The application rate and quantities should follow the supplier instructions/as follows:
  - Trees: (10-15) kg/tree
  - Large shrubs: (7) kg/shrub
  - Small shrubs: (5) kg/shrub
  - Hedges: (5) kg/meter
- **Chemical Fertilizers:** Applied two to four times annually, based on the plant age and in accordance with the supplier's instructions. It should be spread on the plant stem and watered immediately. The application rate and quantities should follow the supplier instructions/as follows:
  - Trees: (150-200) gm/tree
  - Large shrub: (100) gm/shrub
  - Small shrub: (50) gm/ shrub
  - Hedges: (50) gm/meter

### 6.4.8 Staking Newly Planted Trees and Shrubs

The Staking Method is based on the tree age, type, and purpose of planting. The objectives of tree staking are the following:

- Direct trees towards vertical growth without any distortion/curvature.
- Prevent movement (by wind) of the roots in planted trees (movements can tear new roots and slow down formation).
- Support the tree during the formation of firm roots.

Based on the tree type, there are different types of staking methods pertaining to the size and method of planting. All stakes should penetrate the soil by at least 60 centimeters.

- **Single Stake:** Utilized for staking bare-root trees, stakes shall be inserted before planting. The stake should be one third (1/3) of the height of the tree.



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- **Double Stake:** Utilized for container-grown and root balled trees and beneficial on windy sites. Two/three can be inserted opposite to one another/equally spaced around the tree outside the root ball and secured to the trunk by long ties.
- **Angled Stake:** Utilized for trees planted on slopes, stakes should be inserted at a 45-degree angle and leaning towards the prevailing wind direction.

### 6.4.9 Palm Tree Maintenance

Palm Tree Maintenance should be performed by providing irrigation, fertilization, and other agricultural work (i.e., pruning, pollination, harvesting, cultivation, and removing dry fronds, fibers, corymb, control work and replacing damaged/missing palms with identical dimensions).

### 6.4.10 Rubbish and Debris in Gutters, Ditches, and Swales

- All gutters, ditches, and swales in the right-of-way should be free of litter, rubbish, and debris.
- All landscape areas such as the shoulder, gutters, drainage ditches, and swales should be free of debris and trash.
- Debris and trash shall be removed twice a month before mowing activities/as instructed.
- Rubbish and debris resulting from landscape maintenance work shall be removed before the end of each workday/immediately (i.e., creates traffic hazard).
- Water flow in gutter and ditches should not be blocked. Remove vegetation that will block water flow during storms.
- All debris should be disposed of to a managed waste facility per local regulations.

### 6.4.11 Pesticides Control

Refer to National Manual of Assets and Facilities Management – Volume 6 Chapter 21: Pest Control Plan for Parks & Recreation for general guidelines on how to utilize pesticides. Special attention should be considered to the followings when using pesticides by roadways:

- All landscape designated areas in the right-of-way should not exceed 10% weed infestation.
- All landscapes in high visibility urban areas must not exceed 2% weed infestation.
- Pesticide equipment and containers shall never be cleaned in the right-of-way area or the vicinity of storm drains/other open water areas.
- Disposal of dead and decaying pests should be performed in a controlled manner and transported with minimum risk to operatives in disease control.
- Operatives handling the disposal of pests should be inoculated for their protection.

### 6.4.12 Irrigation Maintenance

- Irrigation systems shall be fully functional at all times; the Specialized Contractor shall supply and replace necessary parts and follow correct plumbing procedures.
- Tap boxes, quick coupling valves, pop up sprinkles, and other underground irrigation devices must be at maintained levels and flushed with soil. Pop up risers should be fully retracted when not in use.
- Irrigation systems should be re-programmed to suit special events or changed activities.
- All irrigation system settings need to be managed cost-effectively and monitored according to seasonal conditions.
- Irrigation water flow should not exceed soil percolation rates (if varying soil types exist, the irrigation system operation shall adhere to soil having the lowest percolation rate/limit).



### 6.5 Seasonal Maintenance

Preventative maintenance activities should be conducted throughout the year, and consideration should be given to the specific landscaping seasonal requirements that dictate the maintenance frequency and other attributes (i.e., fertilization, pest control, and mulching). Seasonal maintenance is influenced by the type of plants, trees, and turfs. For example, two types of turf are commonly used in Saudi Arabia; the Cynodon Dactylon, which is a warm-season grass, and Lolium Perenne grass, which is a cold season grass.

The specialized Contractors/Service Providers should follow a Seasonal Maintenance Plan, as illustrated in Attachment 2.

The list shown in Attachment 2 is not wholly inclusive but represents activities to be conducted. The relevant Entity/Contractor shall develop/create a custom program and activities checklist as part of a structured Seasonal Maintenance Plan.

The Contractors/Service Providers should refer to “Landscape Plants for ArRiyadh Region, A Reference Manual by High Commission for the Development of ArRiyadh” for further information and seasonal maintenance requirements specific to local trees, grass, and other plants used in Saudi Arabia.

### 7.0 ATTACHMENTS

1. Attachment 1 - EOM-ZM0-TP-000050 - Landscape Preventative Maintenance Schedule Roadways Checklist
2. Attachment 2 - EOM-ZM0-TP-000051 - Landscape Seasonal Maintenance Schedule Roadways Template





## Landscaping & Grounds Maintenance Plan for Pavements

### 7.1 Attachment 1 - EOM-ZM0-TP-000050 - Landscape Preventative Maintenance Schedule Roadways Checklist

Park Number/Name:			REV.		
No.	ITEM	Frequency	CHECKED SATISFACTORY		
			N/A	YES	NO
1.0	Trees and Shrubs				
1.1	Pruning	Quarterly *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2	Trimming	Monthly*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3	Stem Cleaning	Monthly*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4	Dead plants Replacement	Ongoing (as needed) *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.5	Weed Control	Ongoing (as needed) *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6	Mulching	Monthly*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7	Organic Fertilizing	Twice a year*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.8	Chemical Fertilizing	Twice a year*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.0	Turf		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1	Mowing	Weekly*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2	Trimming	Weekly*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3	Weed Control	Ongoing (as needed) *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4	Aeration	Annually*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5	Chemical Fertilizing	Three times a year*	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
*Task, nature, and frequency to be determined by site-specific requirements - depends among other things upon materials, exposure, and location					
No.	Reviewer's Comments			Resolution	
Originator's Name/Signature and Date:			Checker's Name/Signature and Date:		



## Landscaping & Grounds Maintenance Plan for Pavements

### 7.2 Attachment 2 - EOM-ZM0-TP-000051 - Landscape Seasonal Maintenance Schedule Roadways Template

Months	Jan				Feb				Mar				Apr				May				Jun				Jul				Aug				Sep				Oct				Nov				Dec			
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Trees and Shrubs																																																
Pruning (Type x)																																																
Pruning (Type y)																																																
Trimming (Type x)																																																
Trimming (Type y)																																																
Fertilizing (Type x)																																																
Turf																																																
Mowing (Type x)																																																
Mowing (Type y)																																																
Edging (Type x)																																																
Aeration (Type x)																																																
Fertilizing (Type x)																																																
Palm Tree																																																
Mulching																																																
Fertilizing																																																
Pest Control																																																