Analysis of Construction Key Points and Maintenance Measures for Urban Landscaping Projects

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Abstract: With the sustainable development of China's economy and the accelerated pace of urban modernization, the development of urban landscaping has entered a new stage. To enhance the construction quality of urban landscaping projects and fully leverage their functions, it is essential to comprehensively grasp the construction key points and adopt scientific maintenance measures during the construction process, thereby improving the overall construction level. This paper will provide a detailed analysis of the construction key points of urban landscaping projects and propose specific maintenance measures, aiming to offer effective reference opinions for construction personnel.

1. Introduction

Against the backdrop of accelerated urbanization, urban landscaping projects have become crucial carriers for improving residents' quality of life and enhancing the living environment. High-quality urban landscaping can effectively regulate the climate and bring a natural ambiance to cities, meeting people's demands for a desirable living environment. The effectiveness of urban landscaping projects is influenced by factors such as scientific construction and meticulous maintenance management. However, issues such as low maintenance management levels and non-standard construction practices in some projects have resulted in unsatisfactory landscape effects. Based on this, analyzing the construction key points and maintenance measures of urban landscaping projects holds significant value in improving project quality.

2. Construction Key Points of Urban Landscaping Projects

2.1 Construction Preparation Key Points

Construction preparation is crucial for advancing urban landscaping projects in an orderly manner and is related to subsequent construction efficiency[1]. During the construction preparation stage, comprehensive preparations should be made around the site and the construction plan, with the following specific key points: Site Survey and Cleaning: Organize a professional team to conduct on-site surveys of the construction area, clarify the distribution of underground pipelines and soil fertility in the area, and mark key information such as surrounding buildings in detail to prevent damage to infrastructure during construction. Simultaneously, thoroughly clean up construction debris and other miscellaneous items within the site and address water accumulation in low-lying areas to lay a foundation for subsequent planting. Optimization of Construction Plans and Technical Disclosure: Refine the construction plan based on the design drawings and the actual site conditions, specifying details such as the planting sequence of plants and terrain shaping parameters[2]. After finalizing the construction plan, organize technical personnel and supervisors to conduct technical disclosure, emphasizing the design objectives and critical construction procedures to ensure consistent construction requirements among all parties. Procurement and Inspection of Materials: Procure materials such as organic fertilizers and irrigation equipment according to the construction plan list, giving priority to selecting varieties with strong adaptability and ensuring that seedlings meet planning requirements to prevent the procurement of deformed seedlings. Staff and Equipment Coordination: Establish a professional construction team equipped with technicians

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experienced in greening. Clarify the job responsibilities of each position and provide safety skills training to construction personnel, explaining in detail garden construction norms and seedling planting techniques[3]. Meanwhile, carefully inspect and debug construction equipment such as excavators and transplanters to ensure good equipment performance. Prepare small tools such as measuring tapes and hoes according to construction needs to ensure an adequate quantity of equipment and tools during construction.

2.2 On-site Construction Handling Key Points

In the construction of urban landscaping projects, on-site construction handling is a crucial link from preparation to implementation, directly affecting plant survival rates and landscape quality[4]. The following aspects should be addressed when handling on-site construction: Precise Site Preparation and Terrain Shaping: Adjust the site elevation according to design requirements and use machinery to maintain land flatness, ensuring that the slope meets drainage needs and avoiding water accumulation. For areas requiring undulating terrain, backfill the planting soil in layers and compact it to prevent later settlement. Simultaneously, scientifically divide functional areas, mark boundaries with lime lines, thoroughly clean up gravel and debris, and maintain site cleanliness to create a favorable environment for plant growth. Enhancing the Standardization of Plant Planting: Before planting trees, dig planting pits according to the size of the seedling soil ball and lay rotten-matured organic fertilizer and planting soil at the bottom of the pits. Adjust the verticality of the seedlings during planting, compact the backfill soil in layers, water the root-fixing water, and create tree dams. When planting shrubs, dig trenches according to the design spacing, ensure the roots are spread out, and plant at a depth consistent with the original growth soil mark. Simultaneous Construction of Supporting Facilities: Advance the construction of irrigation systems simultaneously with plant planting. Install sprinkler heads and drip irrigation pipes according to design requirements, ensuring that pipeline burial depths comply with relevant norms. Conduct pressure tests after installation to avoid water leakage. During the construction of landscape features, protect the surrounding planting areas, isolate them with colored cloth strips to prevent mortar and other materials from contaminating the soil. Clean up the site promptly after construction, restore damaged green spaces, and unify equipment with the greening landscape. Implementing Dynamic On-site Management: Set up safety warning signs and prohibit non-construction personnel from entering the construction site. Arrange for dedicated personnel to conduct patrols and promptly address issues such as pipeline damage. Effectively control dust during construction and take protective measures for planted seedlings to prevent damage from severe weather, ensuring the safety and effectiveness of the construction process and creating favorable conditions for subsequent maintenance work.

2.3 Plant Cultivation Key Points

Plant cultivation is the core link in the construction of urban landscaping projects, directly affecting the later landscape effect and seedling survival rates. In plant cultivation construction, the following aspects should be addressed: Strict Screening of Suitable Seedlings: Prioritize the selection of native seedlings, which have strong stress resistance and are adapted to local climate and soil conditions, reducing the cost of later maintenance work. Construction personnel should reasonably control seedling specifications according to design requirements, such as checking the diameter at breast height (DBH) of seedlings during planting, with an error not exceeding ±5%. When selecting ground cover plants, choose seedlings with well-developed root systems and avoid using aged seedlings to ensure the quality of cultivated plants[5]. Pre-treatment before Planting: Trim dense roots and diseased or weak branches promptly after seedlings arrive at the site, keeping the trimming cuts smooth. For tree seedlings, root trimming should not exceed 1/3. For seedlings with soil balls, re-bind them with straw ropes if the soil balls are too loose, and soak bare-root seedlings in rooting agent solutions to enhance rooting ability. Meanwhile, improve the planting soil in advance based on soil fertility, incorporating rotten-matured organic fertilizers into poor soil at a rate of 1500–2000 kg per mu. For saline-alkali soil, adjust the pH value by adding sulfur powder to create a favorable environment for seedling growth.

Comprehensive Grasp of Core Planting Procedures: When planting trees, ensure that the diameter of the planting pit is about 40 cm larger than that of the soil ball and the depth is about 13 cm higher than the soil ball. When planting shrubs, dig trenches according to design requirements, ensuring that the excavation depth is consistent with the original growth soil mark to provide sufficient space for root spread.

2.4 Construction Progress Control Key Points

Reasonable control of construction progress can ensure the timely delivery of urban landscaping projects and avoid delays. The key points in this regard include the following: Preparation of Hierarchical Progress Plans: Determine the start times for site preparation, facility construction, and other tasks according to the total project duration requirements and refine construction tasks for each link. For example, specify time nodes for seedling selection and planting when planting trees[6]. Allocate specific workloads, such as planting 70 shrubs per day, and reserve some buffer time to effectively respond to emergencies such as severe weather and enhance plan flexibility. Dynamic Monitoring and Feedback of Construction Progress: Conduct comprehensive monitoring through on-site inspections and information technology tools. Arrange for dedicated personnel to regularly check for deviations between construction progress and techniques, such as the completion degree of facility construction, and record them in the construction progress ledger. Use project management software to update construction progress data in real-time and generate comparison charts to visually present backward links in construction. Regularly hold construction progress coordination meetings, analyze the causes of construction deviations, and adjust subsequent construction plans promptly to prevent the accumulation of construction deviations.

Overall Optimization of Resource Allocation: Store materials in advance according to the construction progress plan and sign supply agreements with equipment lessors and seedling suppliers in advance to clarify specific delivery times and prevent material shortages. Allocate human resources scientifically and adjust and optimize construction teams dynamically according to construction intensity. For example, appropriately increase the number of seedling planters during the peak planting period to ensure sufficient human resources in each link. Effectively schedule equipment to provide necessary guarantees for the orderly construction of key links. For example, prioritize the allocation of pressure testing equipment for irrigation system construction to improve equipment utilization quality.

3. Maintenance Measures for Urban Landscaping Projects

3.1 Fertilization and Irrigation

Fertilization and irrigation are core links in the maintenance of urban landscaping projects, directly affecting landscape aesthetics and plant growth conditions. In this regard, maintenance personnel should implement relevant measures scientifically based on plant characteristics and seasonal changes. Scientific Fertilization to Meet Plant Nutrient Requirements: Maintenance personnel should follow the principles of timeliness and appropriateness in fertilization, giving priority to rotten-matured organic fertilizers such as sheep manure, supplemented by slow-release compound fertilizers, to prevent single use of chemical fertilizers from increasing soil compaction. When fertilizing trees, ensure a balanced supply of nitrogen, phosphorus, and potassium. From the perspective of fertilization timing and method, spring is the main fertilization period. Apply "spring greening fertilizer" before plant budding, dig trenches 30 cm deep and 20 cm wide along the outer edge of the tree canopy projection, bury the fertilizer, and cover it with soil. Apply organic fertilizers in autumn to enhance plant cold resistance[7]. Supplement fertilizers once after flowering shrubs to prevent nutrient depletion. Maintenance personnel should adjust the fertilization amount according to plant specifications. For example, if the DBH of a tree is 10 cm, apply 7 kg of organic fertilizer to avoid over-fertilization and burning the roots. Water promptly after fertilization to facilitate nutrient absorption.

Reasonable Irrigation to Ensure Effective Water Supply for Plants: Maintenance personnel

should follow the principle of "dry and wet moderately" in irrigation and use irrigation methods such as sprinkler and drip irrigation to prevent water waste from flooding. When irrigating trees, use drip irrigation to ensure moisture in the root distribution area. Adjust irrigation timing and water volume according to the season. For example, increase shallow irrigation frequency appropriately in spring to maintain soil surface moisture. Irrigate in the evening in summer and ensure thorough watering with soil moisture reaching a depth of over 30 cm to prevent root damage from watering at noon. Reduce irrigation frequency in autumn and winter and water thoroughly in advance to enhance seedling cold resistance.

3.2 Plant Pruning

In the maintenance of urban landscaping, reasonable pruning of plants can not only shape beautiful tree forms and maintain landscape hierarchy but also regulate plant growth and enhance plant stress resistance. During actual pruning, maintenance personnel should follow the principles of "landscape adaptation and growth priority" and shape trees according to landscape design requirements. For example, maintain atall and straight tree form for trees and trim shrubs into spherical shapes. Retain healthy main branches and effective branches to prevent excessive pruning from affecting tree vigor. First, remove diseased, weak, and overlapping branches, and then shorten overly long branches to ensure sufficient light and reduce the probability of pest and disease infestations. Meanwhile, conduct precise pruning based on plant types. When pruning trees, maintain a straight trunk and trim lower drooping branches to a height greater than 2.5 meters to prevent interference with normal vehicle traffic. Prune ornamental trees such as magnolias and cherry blossoms later, removing residual flowers and retaining sturdy fruiting branches to prevent excessive nutrient consumption. When pruning evergreen trees, focus on light pruning and only remove diseased and dead branches to avoid damaging the tree form by heavy pruning. When pruning hedge shrubs such as boxwood, trim regularly to maintain consistent height, not exceeding 1.2 meters, and keep the top slightly narrower and the bottom slightly wider to prevent lower branches and leaves from withering due to insufficient light. When pruning low-growing vegetation, only trim yellowed leaves. In addition, accurately grasp the plant growth cycle during pruning, such as pruning deciduous plants during the winter dormancy period and evergreen plants during spring and autumn, avoiding pruning during high-temperature or severe-cold periods. Use tools such as saws and scissors for pruning and sterilize them before use.

3.3 Plant Pest and Disease Control

In the maintenance of urban landscaping projects, plant pest and disease control work directly affects the healthy growth of plants. In pest and disease control, maintenance personnel should follow the principle of "prevention first, comprehensive control" and establish a comprehensive protection system from multiple perspectives, specifically achieving the following:

Strengthening Prevention Efforts to Build a Pest and Disease Defense Line: Control pests and diseases at the source and strictly implement plant quarantine measures. Carefully inspect seedlings during their introduction to prevent the introduction of quarantine pests and diseases and avoid the spread of new pests and diseases. Based on local climate and soil conditions, scientifically plan plant layouts and prioritize the selection of pest-resistant varieties such as camphor trees to prevent large-scale planting of a single tree species and reduce the risk of pest and disease infestations. Meanwhile, reasonably combine trees, shrubs, flowers, and grasses to create an environment that hinders pest and disease proliferation. In daily maintenance management, enhance plant stress resistance through irrigation and scientific fertilization, regularly loosen the soil to facilitate healthy root growth of plants, improve fertilization precision according to plant growth needs, and maintain a reasonable nitrogen, phosphorus, and potassium ratio. Select irrigation methods based on soil moisture conditions to ensure soil moisture without excessive wetness and prevent root pests and diseases.

Implementing Comprehensive Control Measures for Precise Pest and Disease Control: In physical control, utilize the phototaxis of pests and hang frequency-vibrating insecticidal lamps in green spaces to trap moths and other pests. In biological control, focus on "green" measures, protect

and utilize natural enemies of pests, such as releasing ladybugs to prey on aphids, and reasonably use biological agents such as Bacillus thuringiensis to control pests and diseases without damaging the environment. In chemical control, use it only as an emergency measure. Prioritize low-residue and efficient chemical agents, such as imidacloprid for scale insects, and strictly control the dosage according to instructions to prevent abuse.

4. Conclusion

In conclusion, the construction and maintenance quality of urban landscaping projects directly affect the overall urban landscape effect and people's living environment. In this project, construction is the foundation, and maintenance is the support. Only by deeply integrating the two can greening projects be transformed from short-term landscapes into long-term ecological resources, accelerating the achievement of the "dual carbon" goals.

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