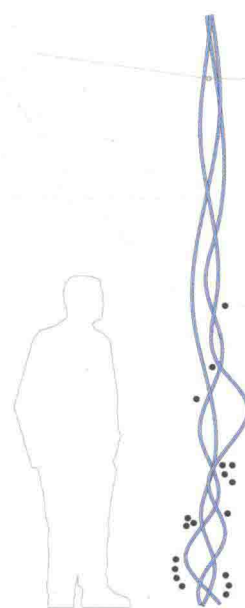
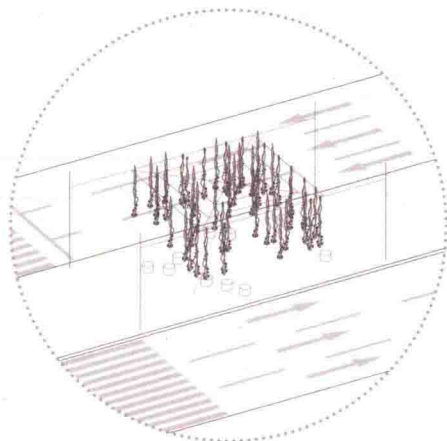
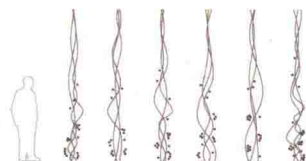


LANDSCAPE LIGHTING

(法) 罗杰·纳博尼 / 编 杨莉, 常文心 / 译

创意景观照明



辽宁科学技术出版社

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Roger Narboni, lighting designer,
CONCEPTO Studio, France
(法) 罗杰·纳博尼,
CONCEPTO 工作室灯光设计师

Light, natural or artificial, has always been related to urban landscapes. Luminous effects, reflection, refraction, natural movements, rhythms, darkness, fauna and flora symbols, were often called and used to create poetics and beautiful nightscapes in urban conditions.

During the last 28 years, I have witnessed the evolution of the lighting design philosophy and the progress of the lighting technologies applied to cities landscapes. With the arrival of LEDs technology and with the increasing consciousness of environmental and nocturnal biodiversity protections, the potential of creating nightscape is both growing and getting more challenging.

From small gardens to monumental parks, from rivers banks to waterfronts, from hilly sites to mountainous territory, the landscape lighting design has made huge progress in terms of scale and technical answer.

The development of the nocturnal tourism by local authorities has also become a challenge for the lighting designer's profession. But the growth of cities, their mutation and their continuous development have lead for many of them to absorption or major changes in the natural geographic site that has been the source of their foundation.

Cities built on the edge of a river's system for example have gradually channeled them and put them underground because they were becoming inconvenient for motor traffic which progressively appropriated the bottom of the valleys. And some of these cities want now to rediscover the pleasures related to the presence of water in the urban environment.

Megalopolis have urbanised their natural territory, creating an incredible tangle of constructions, gaining large areas on the nature. But the result is that it is now totally impossible for their citizens to have a daytime or a night time perception of the original geographical landmarks.

These devastating human actions do not allow anymore the current citizens to understand the original relationship and historical complicity with the natural landscape that have witness their cities foundation.

It is why the design and the scale of the contemporary nocturnal landscapes should now be approached on completely new basis and strategies.

Landscape lighting has therefore today a fundamental and symbolic role to play to reveal the original natural site at night or to evoke significantly these ghost landscapes in order to restore meaning to the relationship between the cities with their inhabitants.

How indeed could we give to the citizens of tomorrow the awareness of the importance of the nature in the city, the respect for the environment, the preservation of ordinary biodiversity and the rediscovery of the darkness without first underlining that they all belong to a territory and to a common geography?

无论是自然光还是人造光，都与城市景观密不可分。在城市环境中，光效应、反射、折射、自然运动、韵律、黑暗、动植物符号等元素经常被用来打造美丽诗意的夜景。

在过去的 28 年中，我见证了照明设计理论的进化和城市景观照明技术的进步。LED 技术的到来以及人们与日俱增的环境保护和夜间生态多样性保护意识为夜景的营造带来了更多的潜力和更大的挑战。

从小花园到大型公园，从河堤到滨水区，从小山丘到山区，景观照明设计在规模和技术层面都实现了巨大的进步。

各地政府对夜间旅游业的开发同样为灯光设计师带来了新的挑战。但是城市的进化和持续的发展让许多城市的自然地理环境产生了巨大的变化。

以建在河边的城市为例，为了方便汽车交通，许多城市都开凿水渠并将河水引入地下。现在，这些城市又想要重新享受滨水乐趣，让河水重新融入城市环境。

大都市已经实现了自然边界的城市化，为了建造各种设施，攫取了大自然的大片土地。但是这种行为所造成的结果就是无论是白天还是黑夜，市民都无法领略原始地标景观的自然之美了。

这些破坏性的人类行为让市民们无法了解自身与自然景观的渊源关系和历史联系。他们不知道，是自然景观见证了城市的创立。

这就是为什么我们要以全新的基础和策略来设计规划当代的夜间景观。

今天，景观照明在展示夜间原生自然场景和引起人们对废弃景观的注意上扮演了最根本的象征性角色，它有助于恢复城市与它的居民之间的关系。

我们如何让未来的市民认识到城市中的自然的重要性以及尊重环境、保护生态多样性和重新发现黑暗中城市的重要性？

当代景观照明如何能帮助人们解读城市的形态？

灯光在夜晚如何呈现普通的花园、公园、河畔开发项目

How contemporary landscape lighting can help to read and to understand the morphology of the cities?

How light can reveal at night an ordinary garden, a new park, a river banks development or a renovated landscape?

New landscape lighting strategies should be developed in accordance with the creation of green and blue infrastructures, taking in account the diverse scales and green grids created inside the urban environment in order to allow people recreation as well as preservation of biodiversity.

The type of light, its position, its intensity, the colour's spectrum of the sources used, the temporalities of the diverse lightings, their extinction periods at night or according to seasons need to be studied in relation with biological surveys of the animal and vegetal species present on site.

And we need also global lighting strategies that take in account the necessity of bringing back darkness in the city, to create at night intimate relationships between the nocturnal urban perceptions and the natural environment. We should develop in the city surroundings as well as inside the urban form a new and innovative darkness strategy, to design for each city a dark infrastructure.

Landscape lighting, urban lighting and lighting master planning can really make cities attractive at night, by enhancing the intrinsic qualities of their natural sites, by revealing those elements of landscape that have made or will made the identity of the cities. It is why landscape lighting need to be more creative but at the same time more respectful of the nocturnal environment.

This book is designed to continue the reflection on urban lighting with the particular question of the urban landscape.

What role can play artificial light, in this questioning? A catalyst for awareness of the beauty and diversity of the landscapes offered to our vision from the city? A stimulus to encourage us to rediscover them day and night? An incentive to apprehend them otherwise, at night?

May this book help to sharpen our eye by expanding our perception, and by arousing to clients and to design teams a real desire for night poetry, when designing and implementing landscaped development.

Can this book also convince cities authorities and citizens of the vastness of the possibilities of artificial light, to progressively transform our panoramas at night in true nocturnal landscapes?

或翻新的景观?

新景观照明策略的开发应当与绿色和蓝色基础设施的开发相一致,考虑到城市环境内部的各种层面和绿色网格,从而既保证人们的休闲娱乐,又能保护生物多样性。

光的类型、位置、强度、颜色、各种光的变化、夜间或季节性熄灭时段都需要根据场地动植物的生物学调查进行严谨的规划。

我们还需要全局灯光策略,让城市回归黑暗,重新在夜间城市感官和自然环境之间建立起亲密的关系。我们应当在城市周边和内部开发具有创新性的黑暗策略,为每座城市设计一个黑暗的基础设施。

景观照明、城市照明和整体照明规划能通过提升自然场景的内在品质和展示构成城市形象的景观元素让城市的夜晚更加迷人。这也是景观照明不仅需要创造性,而且要尊重夜间环境的原因。

本书带领我们思考了城市照明中特有的景观照明问题。

人造光在景观照明中扮演了何种角色?是让我们认识到城市景观美学价值和多样性的催化剂,是鼓励我们在白天和黑夜探索城市景观的刺激源,还是吸引我们在夜间解读城市景观的诱因?

希望本书能开拓我们的视野,激发委托方和设计团队在设计和实施景观项目时对诗意夜景的渴望。

同时也希望本书能让市政管理部门和市民们意识到人造光的无限可能,帮助我们打造焕然一新的夜间景观。

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1. Overview

Landscape lighting is simply lighting used to illuminate different sections of a landscape, yard, garden or other area surrounding a home or business. This can be as simple as a front porch light, or something more complicated such as a network of path lights, spotlights, and water lights. Regardless of the complexity or variation, lighting up your landscape with thoughtfully placed illumination sources can add great visual value to your landscaping and garden furniture.

2. Objective

Landscape lighting should be carefully designed with regard to placement, intensity, timing, duration, and colour. Lighting design and its review should begin with the consideration of its objectives:

Safety: All lighting should minimise the potential for personal harm and damage to property as well as facilitate the movement of vehicles and pedestrians. Dark areas and hiding places should be illuminated, as should obstacles such as curb edges, drainage structures, and other hazards such as fallen limbs or patches of ice. Area lighting should enhance the ability of drivers to see pedestrians and site features such as access points, crosswalks, and signs.

Identification: Lighting should improve the legibility of critical site features, people, landmarks, and active areas. Building entrances and directional signs should be highlighted. Colour perception should not be distorted or harsh.

Aesthetics: Where appropriate site features may be highlighted in a manner that adds to their appearance and recognition. Unique applications make it is possible to create more elegant settings than those found during the day. Techniques used may highlight portions of the built environment while leaving darkened the less attractive site features or infusing colour on the site. The total effect adds to site recognition, communicating a message that the site is a safe and attractive place to visit. This "advertising" is an important element in the success of many projects.

Usability: Lighting can encourage the nighttime use of areas beyond commercial spaces. Communities can extend the use of walkways, lawns, and recreation areas by providing the proper intensity of light.

1. 概述

景观照明即用于照亮景观、庭院、花园以及其他住宅或商业设施周边区域各个部分的照明, 可以是简单的门廊灯, 也可以由路灯、聚光灯、水景灯所组成的复杂照明网络。无论是复杂还是多变, 用精心设计的光源点亮景观都能为景观设计和花园家具增添丰富的视觉效果。

2. 目标

景观照明的设计必须考虑配置、强度、时机、时长、色彩等因素。照明设计以及评估必须考虑到以下目标。

安全性: 任何照明都应当将人体伤害和财产损失的可能性降到最低, 同时辅助车辆及行人的行动。黑暗和隐蔽处、路缘、排水设施、有跌落危险的场所、冰雪堆积的路段都应当采用照明。区域照明应当能让驾驶人看清行人以及入口点、人行横道、路标等场地特征。

辨识度: 照明应当能提升主要场地特征、行人、地标和活动区域的辨识度。建筑入口和导向标识应加以突出。照明色彩不宜失真或刺眼。

美学价值: 经过适当的凸显, 场地特征的外观和识别度可以得到强化。独特的照明应用可能形成比白天更加优美的布景。照明技术的运用能突出局部建筑环境, 同时让视觉效果欠佳的场地特征置于黑暗之中, 并且还能能为场地注入色彩。整体照明效果能增加场地的识别度, 传递出场地安全且具有吸引力的信息。这种“广告效果”是许多项目成功的关键。

实用性: 照明能有效提升非商业空间在夜晚的使用率。社区可以通过合适的光照提升人行道、草坪和休闲区的使用率。



3. Design Principles

Cohesion: Lighting design needs to make visual sense to the viewer. This means that the property must be illuminated in such a way that the viewer recognises key landscape and architectural features and that these features are revealed in a sensible relationship to each other. Cohesion refers to successfully illuminating regions so when the viewer glances across the illuminated scene, the various areas are connected in ways that make visual sense – no black holes that disrupt the viewer's experience.

Depth: Depth refers to the selective illumination of items and areas both near and far from the viewer. This brings a three-dimensional quality to the visual experience. In addition, it adds a participatory dynamism to the viewer's world. When only the house is illuminated, the visual experience is flat, two-dimensional. Compare that poverty of experience to a property with illumination along the driveway, along pathways, around the periphery; such a design invites the viewer to participate in the illuminated world, to navigate among the illuminated objects, to see shifts in perspective, changes in shadows, and so on. Integrating depth into the landscape lighting design creates a rich and rewarding experience.

Focal Points: Every property and structure has distinctive features that serve as points of visual interest. The selection and illumination of these is key to a successful lighting design. The purpose is two-fold; first, to reveal their existence so they may be recognised and appreciated at night; second, to utilise them as visual anchors. This second function allows the designer to direct the viewer's experience, to entice them to first look at this object, then another and so on. Such direction seeks to control the viewer's experience in much the same way as a movie director will direct camera movement to engage the viewer in the story's plot. Common focal points include statuary, garden beds, specimen trees, and entry points.

Light Quality: This refers to the perceived visual nature of the illumination with regard to its affect on the human experience. Typically, the perceptions are described according to the emotional or visceral response. Hence, "romantic lighting", "dramatic lighting", and "subtle lighting"; such as these terms can be said to describe the light quality. These emotional responses are achieved using a variety of techniques including direction (uplighting, downlighting, etc.), beam control (diffusion, bouncing, reflecting, etc.), fixture placement, and brightness.

Perspective: This refers to the skillful placement of illumination that considers the viewer's location. Every property has walkways, driveways, and various private areas frequented by the homeowners and their visitors. The landscape lighting designer needs to consider each location and create lighting schemes that present visual interest and serve the lighting needs. This is sometimes a challenging endeavor since an illuminated area may look better from one perspective than another. Another, even greater challenge, is the need to consider the viewer's perspective from inside the building, and in areas that transition from inside to outside.

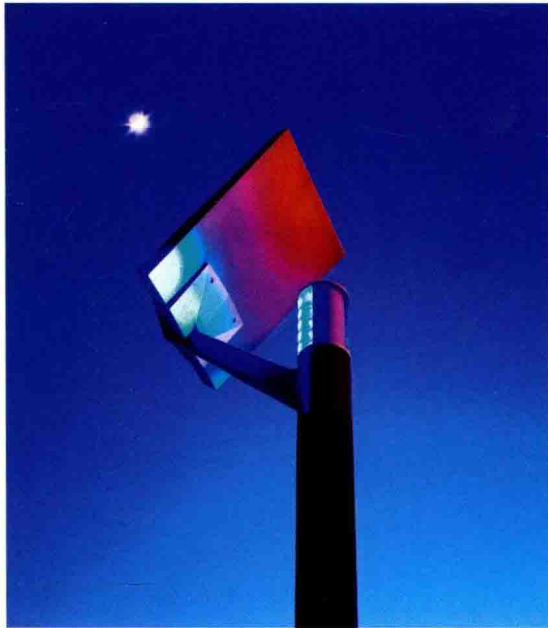
Balance: This principle also relates to creating illumination that makes visual sense to the viewer. Human vision is primarily oriented towards daylight where illumination is fairly even across the visual landscape. Nighttime illumination is very selective with greater contrast between light and dark areas. While daylighting is fairly neutral in emotional response, night lighting can elicit a wide range of responses that span from scary to magnificent. Many factors contribute to these responses; one of them is the presence or absence of illumination that doesn't make intuitive sense. Consider a building where the right side of the lawn is very dark and the left side

3. 设计原则

凝聚感: 照明设计必须让观者产生视觉感受, 即必须让观者识别出主要景观、建筑特色以及那些具有感官联系的特征。凝聚感指的是成功地照亮地块, 使得观者在扫视照明场景时, 能看到不同的区域连接起来, 在视觉体验中没有盲点。

层次: 层次指的是对物体和区域的选择性照明, 从而在观者眼中形成远近错落的效果。这为人们带来了一种三维视觉体验。此外, 它还能观者增添一种参与感。如果只点亮住宅, 那么视觉体验是平面的, 二维的。如果一个地块的车道、人行道、外围边缘全部拥有照明, 那么设计就能邀请人们参与到这个明亮的世界中, 沿着被照亮的物体进行探索, 感受透视和阴影的变化。景观照明设计的层次感能营造丰富且有价值的体验。

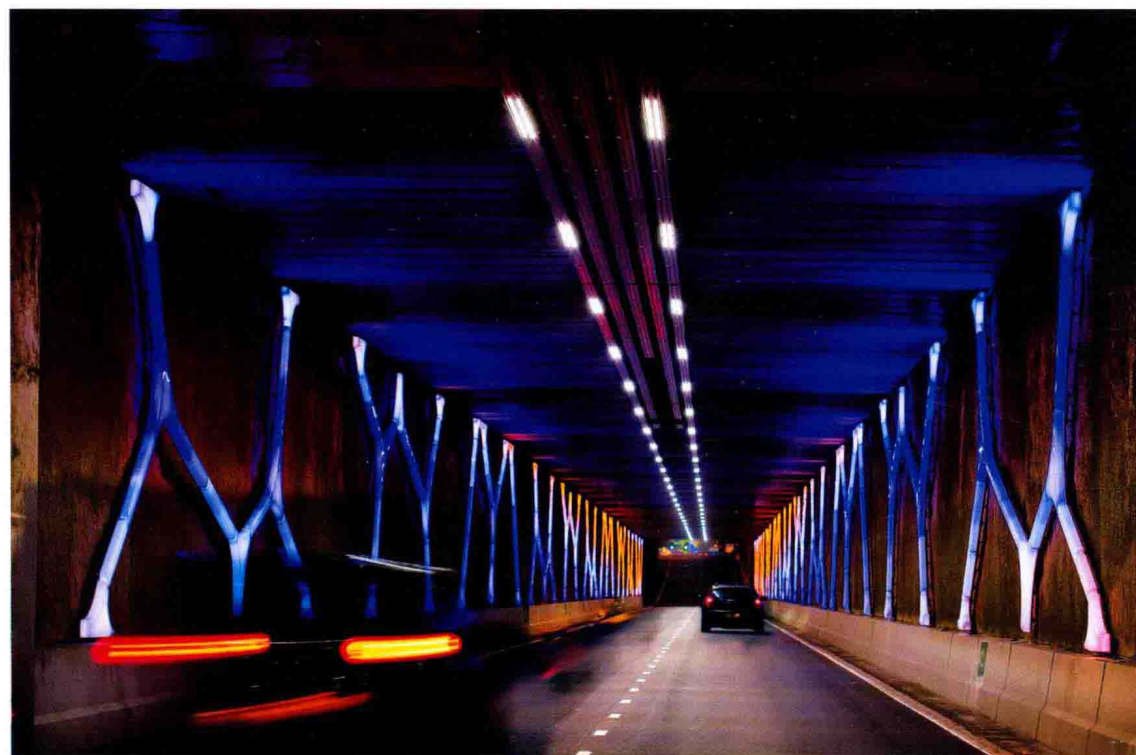
焦点: 每个地块和结构都有其独特的特征, 可以作为视觉的焦点。视觉焦点的选择是照明设计成功的关键。焦点的选择有两个目标: 首先, 显示它们的存在, 使其在夜间被辨认出来并被人所欣赏; 其次, 将它们作为视觉锚点。第二个功能让设计师得以引导观者的体验, 吸引他们由这件物品看到另一件物品。这种引导试图控制观者的体验, 就像电影导演指导摄影机的运动一样, 让观



is illuminated; the viewer senses the imbalance, wonders why? A row of trees border a building, some are brightly lit, others dimly lit; why? A good lighting design recognises the human desire to see balance from left to right and from up to down.

Symmetry: Symmetry represents equivalence on either side of a dividing line. Similar to balance, symmetry is an arrangement that makes visual sense. It is found in architecture and in various regions of the landscape. For example, when a house has a row of columns, these columns should be illuminated in ways that preserve their symmetrical appearance. The illumination on each column should be of similar appearance and brightness; failing to do so would be of detriment to the overall design.

Visual Comfort: Illumination should not be painful or uncomfortable to the viewer. Lighting that is glaring, overly bright, or presents extreme contrasts in brightness not only detracts from the safety and security of site, it also detracts from the aesthetic enjoyment. Skilled designers try to hide the light source and only use fixtures that adequately shield the lamp. In addition, they control light levels with the viewer's visual comfort in mind.



者置身于故事情节之中。常见的视觉焦点包括雕像、花观赏树木、入口点等。

光质: 光质指的是照明被感知到的视觉属性, 即它对类感觉的影响。通常来说, 感知可以根据情绪或内在应来描述, 例如, “浪漫的照明” “戏剧化的照明” “微的照明” 都可以用来形容光质。这些情绪反应可通过各种技术获得, 包括直接照明(上射照明、下射照明等光束控制(漫射、反弹、反射等)、灯具布局、亮度控制

视角: 视角指的是针对观者的位置巧妙地布置照明设施每个地块都拥有人行道、车道和各种私人区域。景观照明设计师需要考虑每个位置, 打造能够呈现视觉焦点服务照明需求的照明方案。这项工作极富挑战性, 因各个视角所看到的照明效果可能会好坏不一。另一个大的挑战是设计还必须考虑到观者在建筑内部以及室外过渡空间的视角。

平衡: 平衡原则同样与观者的视觉感受有关。人类视主要面向日光, 而日光照明在视觉景观上是相当平等的夜间照明极富选择性, 在明暗区域之间有着强烈的对比日光的情绪反应相对中性, 而夜间照明则能引起从惊到惊叹一系列更广泛的反应。许多因素共同促成了这反应, 其中光源的存在与否起到了重要的作用。如果座建筑右侧的草坪十分昏暗, 而左侧则有照明, 那么者会感到不平衡的, 为什么? 假设建筑外围有一排树一些照明明亮, 一些照明昏暗, 为什么? 因为良好的明设计能够识别人类对平衡的感觉, 这种感觉是从左右, 由上至下的。

对称: 对称代表着分界线两侧的均等。与平衡相似, 称也是一种能产生视觉感受的布局, 它出现在建筑和种各样的景观区域内。例如, 住宅有一排柱子, 这些子的照明就应当保护它们的对称外观, 每根柱子的照设施和亮度都应相似。如有失误, 将会损害整体设计。

视觉舒适度: 照明不可以对观者造成任何痛苦或不适感觉。刺眼、过亮或亮度反差过大的照明不仅会损害地的安全性, 还会削弱审美享受。经验丰富的设计师力求隐藏光源, 只采用有灯罩的灯具。此外, 他们还通过控制光照度来保证观者的视觉舒适度。

4. Lighting Techniques – Hardscape Lighting vs. Softscape Lighting

In term of landscaping, hardscape versus softscape refers to the types of materials used and differences in exterior lighting. Exterior lighting for hardscape elements can set the foundation for the lighting of softscape elements. As softscape elements are more fluid, exterior lighting can be adjusted to reflect the more common changes in softscape layouts.

4.1 Hardscape Lighting

Hardscape lighting applies to man-made elements of landscape such as fountains, outdoor sculptures, flat displays, and gazebos. All hardscape lighting follows these guidelines:

Choose a focal point (i.e., structure or water).

Structure: sculpture, flat display, gazebo

- 1) Place lighting to accentuate structure focal point by considering critical viewing angles and location of luminaire.
- 2) Incorporate coloured light effectively so it is not dominated by other lighting.
- 3) Use shadows and highlights to emphasise surface texture and shape.
- 4) Use shielded luminaires and correct beam shape.

Water

- 1) Take light / water properties into consideration when placing luminaires in landscape.
 - 2) Refraction: Known to cause rainbow in rough water.
 - 3) Reflection: Angle of incidence / reflection determines luminaires' location.
 - 4) Diffusion: Potentially will obscure focal points under water in right conditions or add desired effects.
- Choose appropriate luminaires to accommodate material characteristics.

Important to keep in mind: lamp technology choice for increased energy efficiency and lower maintenance costs, cutoff visors and shielding to reduce lighting pollution, beam width / distribution.

4.2 Softscape Lighting

Softscape lighting is the incorporation of surrounding plant and natural landscaping materials into one unified lighting design. Softscape lighting can occur in the following areas: private yards, parks, gardens, boulevards, entry markers, earth markers (i.e., water), etc.

When implementing a softscape lighting design, the following characteristics of the space should be considered:

Identify focal points to be highlighted in landscape and corresponding material characteristics (shape, height, width, age, color, reflectance, texture, density, branching pattern, bark condition, root depth / spread, growth rate, evergreen / deciduous, etc.).

Choose appropriate luminaires to accommodate material characteristics.

Important to keep in mind: lamp technology choice for increased energy efficiency and lower maintenance costs, cutoff visors and shielding to reduce lighting pollution, beam width / distribution.

4. 照明技术——硬景观照明与软景观照明

在景观设计中，硬景观和软景观指的是不同类型的材料和室外照明的差别。硬景观元素的室外照明能为软景观元素的照明奠定基调。由于软景观元素更加流畅，室外照明可通过调节来反映软景观布局更常见的变化。

4.1 硬景观照明

硬景观照明针对喷泉、露天雕塑、平面展示、凉亭等人造景观元素。所有硬景观照明都应当遵循以下原则：选择一个焦点（构造物与水景）。

构造物：雕塑、平面展示、凉亭

- 1) 考虑关键视角和灯具的位置，用照明突出构造物的焦点。
- 2) 有效地融入彩色光，使其不被其他光线所掩盖。
- 3) 采用阴影和高光来突出表面纹理和造型。
- 4) 采用有灯罩的灯具和恰当的光束形状。

水景

- 1) 在景观照明的配置中将光和水景纳入考量。
- 2) 折射：可以在水花四溅的水面形成彩虹。
- 3) 反射：入射角和反射角决定了照明装置的位置。
- 4) 漫射：合适的条件下可能会模糊水下的焦点或增添预期的效果。

选择合适的灯具来配合材料特色。

注意：选择节能、低维护成本的照明技术，利用遮板和灯罩来减少光污染、光束宽度和辐射度。

4.2 软景观照明

软景观照明是将周围的植栽和天然景观材料整合成一个统一的照明设计。软景观照明可以涉及以下区域：私人庭院、公园、花园、林荫道、大门标志、地标等。

确定景观中需要突出的焦点和形影的材料特色（造型、高度、宽度、年限、色彩、反射比、质地、密度、分支图案、树皮条件、根系深度 / 延展度、生长速率、常青或落叶等）。

选择合适的灯具来配合材料特色。

注意：选择节能、低维护成本的照明技术，利用遮板和灯罩来减少光污染、光束宽度和辐射度。

5. Lighting Strategies

The following describes some ways you can aim lights to get a particular result in the landscape.

5. 照明策略

可以采用以下策略在景观设计中实现特定的照明效果。



SHADOWING
阴影照明



SILHOUETTE LIGHTING
剪影照明



SPOT LIGHTING
聚光照明



Shadowing

Opposite of creating silhouettes is creating shadows. Use interesting shaped objects or vegetation, place the fixture directly in the front of the subject and aim the light through it so that it casts a shadow on the surface vertically. To enlarge a shadow on a subject, position the fixture closer to the subject so that the shadow is created larger on the surface. This technique can also be used to add security lighting to the home or business.

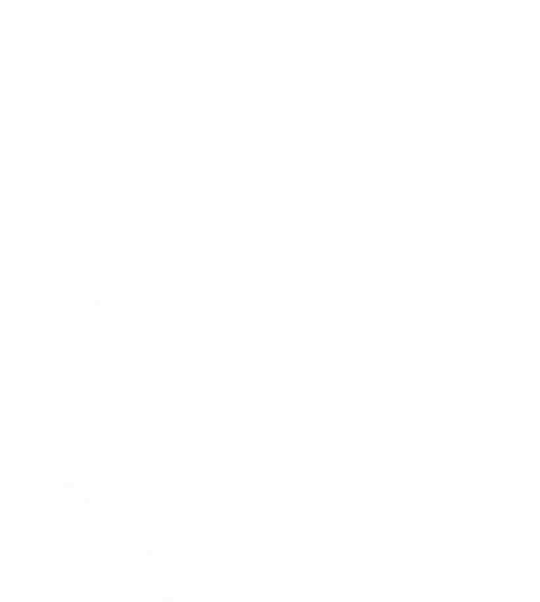
Silhouette Lighting

Silhouetting is a type of exterior lighting that can bring a dramatic feeling to a landscape when done properly by lighting the background. It creates a large amount of contrast between the object being highlighted and the background. It is harder to set up this type of exterior lighting, and it is typically reserved for circumstances where a background can be brightly illuminated against a silhouetted object. Dense and large plants in close proximity to a wall are a good object to consider using silhouetting on. Other objects may benefit from other lighting techniques unless they cannot be effectively lit from a front angle.

Accent Lighting and Spot Lighting

Accent Lights provide lighting for a landscape, such as illuminating a specific landscape feature with direct light. Spotlights are very similar to accent lights, except they provide a larger, more easily discernable direct light source. Spotlights are used to illuminate large landscape features, such as statues, sculptures, fountains, and building features. They both can be adjusted to point in nearly any direction. They range in size from small to large, and price from under \$5 to \$30+ (prices can be much higher for large spotlights).

Spotlights can also be used to provide lighting for a large area, such as a patio, driveway, parking lot, or porch. Floodlights are spotlights that don't have a restrictive casing on them. The lack of casing allows for light to be dispersed over a wider area. These are very common for deck lighting as well as for hooking to motion detector or security systems. They are also typically connected to back up power generators, both in and outside, for instances of power outage or emergencies.



阴影照明

与剪影照明相反，阴影照明是打造阴影。利用造型有趣的物体或植物，将灯具放在目标的正前方，使光线穿过它直达垂直表面。为了放大目标的阴影，可以让灯具更贴近目标，形成更大的阴影。这种技术还能用于增强住宅或商业设施的安全照明。

剪影照明

如果运用得当，剪影照明能通过背景的照明带来一种戏剧性的景观效果。它在突出的物体与背景之间形成了强烈的对比。这种室外照明的设置较难，剪影物体被投射的背景必须特别明亮。贴近墙壁的浓密的大型植物是最佳的剪影目标。如果不能采取有效的前角照明，那么建议采用其他的照明技术。

重点照明和聚光照明

重点照明通过直接光线来照亮特定的景观元素。聚光灯与重点照明十分相似，但是它的直接光源更大、更易分辨。聚光灯用于照亮大型景观元素，例如，雕像、雕塑、喷泉和建筑特征。聚光灯几乎可以随意调节方向，尺寸有小有大，价位在 5 美元至 30 多美元之间（大型聚光灯的价格可能更高）。

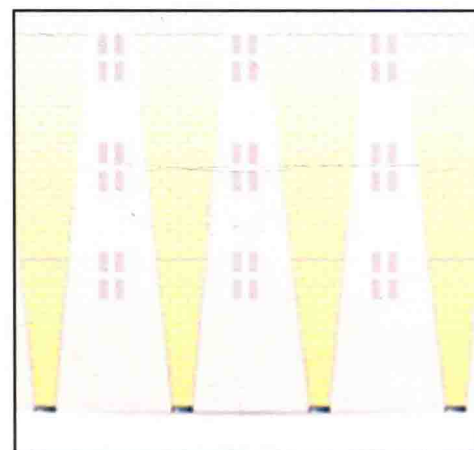
聚光灯还可用于为大面积区域提供照明，例如，露台、车道、停车场、门廊。泛光灯是一种没有限制外壳的聚光灯，外壳的缺失让光线的传播范围变得更广，常用于平台照明、运动检测器或安全系统。泛光灯还经常与室内外的备用发电机相连接，在断电或紧急情况时提供照明。



SIGN LIGHTING
标识照明



MOON LIGHTING
月光照明



UP LIGHTING
上射照明