

# 金地·南昌湖光雅苑售楼处项目

建筑外立面照明设计

施工图（仅供招标使用）

修订

REVISION NO. TD

制表人

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**灯具序言 LUMINAIRE PREAMBLE**

1 常规条款General Conditions

1.1 本招标文件应由本序言，为本项目特定区域内的灯光照明设计要求的灯具详细说明书，灯光设计顾问的相关设计图纸概述以及应用于此部分工作的施工说明的总则共同组成。

861 The specification sheets indicating the lighting design requirements for specific areas within this project form part of this document and should be read in conjunction with these preambles and the Specialist Lighting Consultant’s relevant drawings, associated sketches and general requirements of the specifications apply to the work of this Section.

龙湖蒋:

景观照

招标文件

1.3 本文件将替代所有以往所发出的文件。

This specification supersedes all previous issues.

1.4 在该规范中，“设计师”这个词包括建筑师、业主代表以及照明顾问（按照他们的决定，包括全部三方或者仅包括个别的单方或双方）；“设备”这个词指灯具和光源。

In this specification, the term “Architect” includes the Architect, Owner’s representative and/or the Lighting Consultant, together or individually as they shall decide. The term “fixtures” refers to lighting fixtures and luminaires.

1.5 投标公司在递交商务文本前，应该提供详细的公司情况。

The Bidding Contactor shall satisfy themselves for the necessary completeness of the provided information prior to submitting the final pricing.

1.6 投标公司根据图纸和设备清单列出的灯具为室内或室外的照明灯具、照明设备以及灯泡的安装提供人工、材料和安装设备。参考图纸尺寸和细部，在开始工作前核对、校验图纸的尺寸和细部，即刻向设计师汇报图纸上出现的任何矛盾或差异。在工作中会出现图纸或说明中的细部或说明不充分的情况，应向设计师寻求深化的图纸或施工说明，在工作中遵照这些说明。如果对图纸或说明产生疑问，向可作最终决定的设计师提出该问题在任何时候都不应该在有疑问的情况下递交投标书或继续下面的工作。施工说明和相应图纸的目的是为工作的各个方面提供完整的指导，承包商对这个结果负责。

The Bidding Contractor shall provide labor, materials, and equipment for the installation of indoor and outdoor lighting fixtures, lighting equipment, and lamps as shown on the drawings and specified here. Refer to drawings for dimensions and details. Check and verify dimensions and details on drawings before proceeding with the work. Report any discrepancies at once to the Architect. Should it appear that the work intended is not sufficiently detailed or explained on the drawings or in the specifications, apply to the Architect for further drawings or explanations, as may be necessary. Conform to these explanations in the work. If any question arises about the true meaning of the drawings or specifications, refer the matter to the Architect whose decision is final and conclusive. In no case submit a bid, or proceed on any work with uncertainty. The intention of this specification and the accompanying or applicable drawings is to provide a job complete in every respect. Contractor is responsible for this result.

1.7 明确说明某部分工作将有另外的供应商完成，以及与该部分工作相关联的材料。按照要求进行协调工作。电气图纸中的灯具安装位置是大致、约略的标识，在安装前要根据设计师的设计图、天花布置图和其它的参考数据认真核对安装位置、检查净空的空间是否足够、与其它的设备(如风管、管道、或通风等)是否冲突。在施工前，将存在冲突的部分告知设计师。要十分注意建筑上安放设备所需的开孔空间，以避免开凿已完工的部分。在充足的时间内提供工程所需足够数量的材料和人工，使工程按照正常进度完成，避免地板和墙面的不必要的开凿。

Clearly indicate the Work to be performed by other trades contractors, and the materials that are adjacent to or abutting the Work of this Section. Coordinate as required. Fixture locations as indicated on the electrical drawings are generalized and approximate. Carefully verify locations with Architect’s plans, reflected ceiling plans and other reference data prior to installation. Check for adequacy of headroom and non-interference with other equipment, such as ducts, pipes or openings. Bring conflicts to the Architect’s attention before proceeding with the work. Give ample notice of special openings required for placing equipment in the building, in order to avoid cutting of completed work. Furnish the materials and labor for Work included under this Section in ample time, and in sufficient quantities so that all of the Work may be installed in proper sequence to avoid unnecessary cutting of the floors and walls.

1.8 同其它部分工作部门、设备公司、通讯公司协同合作，以保证各自的工作的各个环节能够在规定的时间内顺利完成。施工工作应该按照正常的进度进行，不应出现因为这个部分的工作而导致的不必要的工程延误。制定工程进度表，以避免这一部分的工作不会在其它部分工程施工过程中被破坏，因此类破坏引起的移除或者替换工程不应向业主要求费用。

Co-ordinate and schedule the Work of this Section with the Work of other Sections, Utility Companies and the Telephone Company so that there shall be no delay in the proper installation and completion of any part of each respective Work. Construction Work shall proceed in its natural sequence without unnecessary delay caused by the Work of this Section. Schedule the Work to prevent Work of this Section being damaged by other construction operations. Remove and replace Work so damaged at no cost to Owner.

1.9 该部分工程中需要平整或隐藏安装的部分，安装时要确保没有凸出到地板、天花板或墙面的装饰层边界之外。虽然该部分工程设备的安装位置会在施工图中的某个位置上标出，而在实际施工中可能发现工程的安装位置并不能很快、很简单的确定。当出现此类情况，在安装前须告知设计师，说明情况，并按照设计师的指令组织施工。校对所有灯具的固定条件，按照要求采用适当的固定方法，此类固定方法的细节需要经过设计师核准。

3 实物模型MOCK-UP

Where Work of this Section is to be flush or concealed, install it to assure that it does not project beyond the finished lines of floors, ceilings or walls. Although the location of equipment included in the Work of this Section may be shown on the Contract Drawings in a certain place, actual construction may disclose that the location for the Work does not make its position easily and quickly accessible. In such cases, call the Architect’s attention to this situation before installing this Work, and comply with his installation instructions. Verify mounting conditions for all fixtures, and furnish appropriate mounting details upon request. Such mounting details shall be approved by Architect.

1.10 报价应包含到指定的工地的费用。

All prices will include delivery to an approved location at site.

1.11 报价应含税。投标公司应将有关费用列明供业主参考。

All prices will be quoted in RMB inclusive of all duties and taxes. The Bidding Contractor may choose to identify these separately for consideration by the client.

1.12 所有灯具的报价应包括光源和控制系统。投标公司应将有关费用单列。

All Luminaires will be quoted inclusive of the necessary lamps and control gear. The Bidding Contractor may choose to provide a breakdown of these prices separately.

1.13 要求投标公司递交确认的标书或有选择性的标书。不完整的标书将不被采纳。

The Bidding Contractor is required to submit a conforming bid and may additionally choose to submit an alternative bid. Bids with incomplete conforming bids may not be considered for evaluation.

1.14 所有标书的递交将包括招标回送表。任何附加内容可以附加在文件后但不属于正式的招标回送内容。

All bids will be submitted in the attached Tender Return Forms. Any additional or supplementary information will be attached to the document but will not be considered in lieu of the Tender Return Form.

1.15 对于任何争议，以业主的决定为准。

In the event of any discrepancy the decision of the Client is final.

2 样品与原型SAMPLES & PROTOTYPES

2.1 任何一个标准的样品，特殊灯具的原型和标准灯具的替代品，其费用应包括在报价中，或按协议由客户及其指定的代表分担。

If requested, the Contractor will supply a sample of the specified luminaire, or prototype of a special luminaire or variant of a standard luminaire and its cost shall be incorporated in the tender price.

2.3 在灯具说明中特别指出要求提供样品的灯具，除非有其它说明，则需要提供该灯具样品。请为需要提供样品的灯具提供一个可以正常工作的 220V 工作电压，并带有插头的灯具。否则，需根据特别要求提供灯具组件。

When samples are specifically called for in the Fixture Descriptions in this Section, submit (1) sample unless otherwise indicated. If fixture samples are requested, supply a completely operable fixture with a plug for standard 220 Volt service. Otherwise provide component parts as specifically requested.

2.4 除上述要求之外，在安装施工详图、灯具数量和设计师所提的其它要求都被核准之后，请向设计师提交下列组件的样品。每一个不同尺寸和表面喷涂处理的筒灯的反射罩。每一种定制的或设计师要求的表面喷涂处理的样品。

In addition to the above, after shop drawings, data and any other required submissions have been approved, submit to Architect a sample of one of the following components. Each downlight reflector cone that differs in size or finish. Finish samples of any custom color or finish requested by Architect.

2.5 在提交的组件样品被认可之前，不要对涉及该组件的灯具进行装配。按照灯具说明的要求，提供或者另行提供样品，直到样品被核准通过。

Where a sample is submitted or requested, do not fabricate that fixture type until the sample is approved. Submit and resubmit a sample as specified in the Fixture Descriptions, as required, until samples are approved.

2.6 在样品上贴上项目名称、参考的标准、段落章节或图纸编号、灯具型号和所有可确定的数据；将样品送到设计师指定的地址。经过预检，将样品送到设计师的项目所在地作为对比参考使用，样品的运输费用由承包商支付。为该项目最终供货的灯具须与经过核准的样品一致，不可在项目中安装任何曾用作样品的灯具。

Tag samples with the name of the project, referenced specification, paragraph or drawing number, the fixture type number and any other identifying data. Ship the sample to the address specified by Architect. After review, the sample shall be shipped to the Architect at the project site for use as a comparison standard. All transportation charges for samples shall be paid by the Contractor. Make fixtures supplied under the work of this Section identical with approved samples. Do not install any sample fixtures in the project.

h. Unified Standard for Constructional Quality Acceptance of Building Engineering GB 50300-2001

作为该项工作的一部分，对于下面灯具说明中特殊指出的灯具，在不增加业主成本的情况下，临时安装、连接和调整三个该指定灯具的实物模型，以便对其特殊的要求进行验证。按照设计师指定的时间、位置安放灯具实物模型；该模型一经核准，其安装和移除工作由承包商完成。B. 屋顶水波纹效果模型制作：按照 1：5 的比例制作模型，制作内表面涂黑的木制或铝制盒子模拟夜间效果，在该盒子基础上按照尺寸比例安装同比例缩小的灯具（灯具所使用 LED 光源必须与实际灯具使用的 LED 光源相同），同时制作控制软件。在模型制作前，承包商需提供模型施工图供设计师审核，审核完成后，方可进行模型制作。自收到图纸后五周内，供应商须完成模型并提交业主及设计师审核。完成的模型在提交设计师审核时，必须为可以良好工作的带实际动画演示的模型。

As a part of the work of this Section, where specifically called for in the Fixture Descriptions below, and at no additional cost to Owner, temporarily install, connect and adjust a reasonable number (3) of fixtures of each type specifying a mock-up, to verify specified requirements. Place the mock-up fixtures where and when directed by Architect. Removal and storage of mock-up fixtures, when approved, shall be accomplished by the Contractor.

4 执行标准STANDARDS COMPLIANCE

4.1 所有提供的照明设备应与项目所在国的原始相关标准相符。

All equipment supplied shall comply with the relevant standards currently in force locally.

4.2 所需的报批费用应包括在报价中并附列详细清单。

The cost of obtaining any necessary approvals shall be included in the tender price, and detailed as a separate item.

4.3 承包商应依照工程所在城市、州府、国家的现行规范，进行灯具的施工、安装及走线，提供符合或超出 UL 标准的灯具；另外，提供的灯具符合在当地使用附加规范。所有的电气部件要通过 UL 标准认证，中国强制 CCC 认证及 CE 认证。应特别注意参考国家电气规范 410（灯具）的内容，提供的灯具必须符合这些标准（按照当地的管理机构的解释）；厂商提供的目录可能不包括热保护装置，这由承包商去联系调整装在天花板上的灯具以符合当地的规范标准。

Provide fixtures constructed, wired and installed in compliance with the current edition of applicable city, provincial and national codes. Provide fixtures conforming to Underwriters Laboratories Standards, and to provisions of applicable codes which exceed those standards. In addition, provide fixtures which conform to additional regulations necessary to obtain approval for use of specified fixtures in locations shown. Use only electrical components listed by Underwriters Laboratories. Particular attention is called to Article 410 (Lighting Fixtures) of the National Electric Code. Provide only fixtures that meet these requirements, as interpreted by local agencies. As manufacturers' catalogue numbers may not include thermal protection devices, it is Contractor's responsibility to co-ordinate the fixture provided with the ceiling construction in accordance with local code enforcement practice.

4.4 检验标准Recognized Standards

- a. 美国保险商试验所 (UL)
- b. 美国国家电气规范 (NEC)
- c. 镇流器生产商协会 (CBM)
- d. 北美照明学会 (IES)
- e. 美国实验材料学会 (ASTM)
- f. 美国国家标准化组织 (ANSI)

- a. Underwriters Laboratories (UL)
- b. National Electrical Code (NEC)
- c. Certified Ballast Manufacturers Association (CBM)
- d. Illuminating Engineering Society (IES)
- e. American Society for Testing and Materials (ASTM)
- f. American National Standards Institute (ANSI)

4.5 当地标准

- A. 民用建筑电器规范标准 JGJ/T 16-92
- B. 低压配电设计规范 GB 50054-95
- C. 民用建筑照明设计标准 GBJ 133-90
- D. 建筑照明术语标准 JGJ/T 119-98
- E. 智能建筑设计标准 GB/T 50314-2000
- F. 建筑电气工程施工质量验收规范 GB 50303-2002
- G. 电气装置安装工程接地装置施工及验收标准 GB50169-92
- H. 建筑工程施工质量验收统一标准 GB 50300-2001
- I. 电气和电子设备按防触电保护的分类 GB/T12501-92
- J. 上海市城市环境（装饰照明）标准
- K. CCC 中国强制产品认证
- L. CE 中国强制产品认证

LOCAL STANDARDS

- a. Code For Electrleal Design Of Civil Buildings JGJ/T 16-92
- b. Code For Design Of Voltage Electrical Installations GB 50054-95
- c. Specification for Construction and Inspection Of Building Lighting Engineering CBJ 133-90
- d. Standard For Terminology Of Architectural Lighting JGJ/T 119-98
- e. Standard for Design of Intelligent Building GB/T 50314-2000
- f. Code of Acceptance of Construction Quality of Electrical Installation in Building GB 50303-2002
- g. Code for Construction and Acceptance of Grounding Connection Electric Equipment Installation Engineering GB50169-92

6.7.2 在安装施工阶段，除非出现特殊情况，如无无法按期供货，否则不考虑使用替换品。该延误如果是由于承包商无法按照注有“提交”字样的订单明细表订购灯具而引起的，则上述理由不可接受。碰上此等情况，承包商必须按照清单为工程提供灯具，不得延期，并且不给业主追加费用。

- i. Classification of Electrical and Electronic Equipment with Reqard to Protection against Electric Shock GB/T12501-92
- j. The Standard for the Urban Area Environment & Decorative Lighting in Shanghai
- k. China Compulsory Certufucation
- l. European Conformity

5 防护PROTECTION

5.1 所有的设备必须提供良好的防护以防止运输途中或安装以前的仓储过程中状态完好。

All equipment shall be supplied with adequate means of protection to ensure its preservation during transport to site and any subsequent storage prior to installation.

5.2 对于那些在安装与交接过程中易擦碰伤的零件须张贴可撕掉的保护膜。

A removable film applied prior to dispatch shall further protect all vulnerable finished parts liable to scratching or other abrasion during handling and installation.

6 质量保证GUARANTEES

6.1 合格的厂商已列在灯具表上。厂商在投标前能按照要求准备提供相应文件，以证明其五年内的产品或类似灯具是符合要求的。

Acceptable manufacturers are listed in the fixture descriptions. Acceptable manufacturers shall be prepared to provide, upon request, proof of satisfactory production of equal or similar fixtures for a period of at least five years prior to bidding.

6.2 作为工程质量保障的一部分，承包商在开始工作的时候，应该承担所有的职责，确保工程中出现的组件、构件或者工程中需要的零配件与合同文件中约定的相一致。

The Contractor, by commencing the Work of this Section, assumes overall responsibility, as a part of the warranty of the Work, to assure that assemblies, components and parts shown or required by the Work of this Section comply with the Contract Documents.

6.3 与组件的质量保证期要求，自设备送到工地起不少于 18 个月或工程完工后不少于 12 个月。其中不包括因劣质的工艺；材料或设计而引起的不属正常质保范围内的质量问题。灯泡的要求应达到出厂标准要求的使用寿命与效果。

All equipment and components supplied shall be guaranteed against failure due to poor workmanship, materials, or luminaire design, for a period of not less than 18 months from the date of delivery to site or 12 months from the date of practical completion, whichever is the sooner, with the exception of lamps which shall be covered only by their manufacturer's normal assurances as to life expectancy and performance.

6.4 中标单位将被要求递交质量保证书给业主。

The successful bidder will be required to submit proof of all guarantees to the client.

6.5 在获得业主最初承诺，确定质保期开始之日起两年内，在通常运行状态下，如果出现材料或者工艺问题，应业主要求，在不追加任何费用的情况下，承包商应迅速提供替换的灯具或者组件（光源除外）。经业主同意，承包商可以到工作地点维修设备至客户满意，并负责维修损坏的邻近物品。在维修期内的任何时间，灯具因为材料或者工艺问题不能正常运转，承包商要提供或者支付并且负责安装、移除合适的暂时性替代灯具。同时，承包商要承诺替换的灯具或者材料在更换之后的两年保修期内不会出现质量问题，在此期间免费更换有缺陷的灯具。

For a period of two year after Owner's initial acceptance and establishment of the beginning date of the warranty period, and at no additional cost, the Contractor shall promptly provide and install replacements for fixtures or components (except for lamps) which, in the opinion of the Owner, are defective in materials or workmanship under normal operating conditions. If approved to do so by the Owner, the Contractor may repair installed equipment at the job site to Owner's satisfaction, provided that the Contractor repairs any damage to adjacent Work. For any time during the warranty period that fixtures are not fully functional due to defects in materials or workmanship, the Contractor shall provide or pay for and install and remove suitable and adequate temporary lighting fixtures. The Contractor also warrants replacement fixtures or components to be free of defects in workmanship or materials for a period of two year following replacement, and shall replace any defective replacements during their warranty period.

6.6 在质保期内，承包商须负责维修。

The contractor shall be responsible for maintenance during the warranty period.

6.7 替代品Substitutions

6.7.1 该项目中所选用的灯具为经过核准的类型和品牌。除非经过认可，不得提供任何替代品。

Fixtures included under this Section are specified by approved manufacturer and type. Furnish equipment as specified, unless substitutions are mutually agreed upon, as follows.

Construct fixtures with the minimum number of joints. Make unexposed joints by approved method such as welding, brazing, screwing or bolting. Soldered joints are not acceptable. Do not use self-tapping methods or rivets for fastening parts which shall be removed to gain access to electrical components requiring service or

When the Contractor proposes substitutions for materials, methods, or equipment, the Contractor shall submit a written request for proposed fixtures to be substituted to Architect at least two weeks prior to the bid period. Substitutions proposed less than two weeks prior to the bid submittal date, and/or not including proper documentation, shall not be considered. The Owner shall accept or reject proposed

During the construction period, no substitutions shall be considered unless compelling reasons are given, such as inability to meet delivery schedule. This reason shall not be acceptable if delay is caused by Contractor's failure to order fixture in accordance with the schedule presented under "SUBMITTALS" below. In such cases, it is Contractor's responsibility to provide fixtures as specified without delay to the project and without additional cost to owner.

6.7.3 替代品必须提供样品、样本规范、完整的光度数据报告以及节省费用的证明文件。每一种请求认可的替代品都要附有单独的书面提案，同时要有完整的产品描述和技术数据，并标明在基标上的费用追加或削减。至少在投标前两周提交一份预备替换的灯具的书面材料给设计师，如果没有正确的资料文件，将不予考虑。业主有权接受或者拒绝替换灯具的建议。

Substitutions shall be named, samples, catalogue cuts and complete photometric reports submitted, and cost savings documented. Each substitution requested shall be submitted in the form of an alternate, separate proposal, accompanied by complete descriptive and technical data, indicating addition or deduction from the base bid. Submit a written request for proposed fixtures to be substituted to Architect at least two weeks prior to the bid period. Substitutions proposed less than two weeks prior to the bid submittal date, and/or not including proper documentation, shall not be considered. The Owner shall accept or reject proposed

6.7.4 设计师可以要求承包商提供建议替换灯具的样品。如前面所提及的，为每种建议替换的灯具提供完好的可正常使用的样品。上述替换灯具的样品要至少在标书提交前一周提供给设计师，如果资料不正确，将不予考虑。

The Architect may request samples of fixtures proposed as substitutions by the Contractor. Submit complete and operable sample fixtures for any proposed substitution as indicated above. Substitution samples provided to the Architect less than one week prior to the bid submittal date, and/or not including proper documentation, shall not be considered.

6.7.5 如果建议使用的替代品引起标书中被替代品的功能、外观或者所需的空间、安装细部的变化，承包商应在建议文件中具体指出这些改变，包括设计费用和施工费用的调整。

Where proposed substitutions alter the function or appearance, or change space requirements or mounting details indicated in the Contract Documents, the Contractor shall detail such changes in the proposal and include costs for revised design and construction for trades involved.

6.8 设备兼容性：对每一相似类型的灯具和部件提供同一个厂商的产品及配件，以简化设备的维护和更换。

Equipment Compatibility: For each group of similar fixture types provide fixtures and components fabricated by one manufacturer, to simplify maintenance and replacement of equipment.

7 灯具产品LUMINAIRES

7.1 按照最高标准为该项目提供符合图纸要求的材料、设备、附件和施工工艺。对于没有在图纸中特别指出的一般应用的灯具部件或附件，要用最适合其用途和功能材料制造，具有良好的防腐、抗热和抵御机械压力的性能。

Provide materials, equipment, appurtenances and workmanship for the work of this Section conforming to the highest commercial standards, as specified and indicated on the drawings. Make fixture parts and components not specifically identified or indicated on the drawings, of materials most appropriate to their use or function, and resistant to corrosion and to thermal and mechanical stresses encountered in the normal application and function of the fixtures.

7.2 提供的嵌入式安装的灯具要与它们安装部位的天花板、墙壁或人行道的材料和构造相协调。

Provide recessed fixtures that are constructed to be suitable for and compatible with the ceiling, wall or pavement materials and construction in which they will be installed.

7.3 材料和装配MATERIALS AND FABRICATION

7.3.1 除非特别指明，否则都要使用完全隐藏的五金组件。在金属部件需要焊接的部位要用焊接材料完全焊接，焊接口要研磨平滑，没有内部光线的泄漏。金属材料之间要使用安装垫圈。白炽灯灯具的垫圈要整齐叠放。镇流器、光源灯座和反射器部分都要跟灯体很好的焊接。不准使用自旋螺钉。

Unless otherwise noted, use only completely concealed hardware. Weld exposed metal at joints, fill with weld material, grind smooth, and make free from light leaks by the inherent design of the fixture body and frame. Bond gaskets, when used, to the fixture metal. Gasket incandescent fixtures with overlapping trim. Weld ballast support studs, socket saddle studs and reflector support studs to fixture body. Self-threading screws are not approved.

7.3.2 除非特别指明，否则在灯具的外部应使用柔韧性好的电线管进入灯具内部。除非特别指明，电器箱部分要通风散热，光源应从底部更换。

Make flexible leads enter fixtures at sides, unless otherwise noted. Ventilate ballast compartments and fixtures using bottom relamping, unless otherwise noted.

7.3.3 除非特别指明，否则灯具组件应使用 22 规格或厚0.79毫米的钢板制作。

Fixture components shall be constructed of minimum 0.759mm / 22 gauge sheet steel unless otherwise specified.

7.3.4 制作灯具时应保证做到最小数目的连接点。接口处用经过核准的方式隐藏连接，诸如定位焊接、铜焊、螺纹连接或螺栓连接等，不能使用焊料接口。在固定电气附件 或它们的支撑结构，固定有可能需要移除或更换电气附件的部位不能使用自焊钢的方式或铆钉固定的方式。

Provide wiring channels and wireways free from projections and rough or sharp edges throughout. At points or edges over which conductors shall pass and may be subject to injury or wear, round bush to make a smooth contact surface with the conductors.

not acceptable. Do not use overlapping members or methods for fastening parts which shall be removed to gain access to electrical components requiring service or replacement, or for fastening any electrical components or their supports.

7.3.5 灯具的金属铸件或压铸部件要完全去刺，不准出现污点、不完整或颜色缺陷。提供的部件要严格按照灯具大样图制作，具有要求的重量的厚度。部件要有完美的装配、琢磨、抛光和镭雕以提供完美的表面和节点，不得有不完整的现象。压铸件的厚度不得低于 1/8英寸或3.175毫米厚。

Provide metallic cast or extruded parts of fixtures that are close grained, sound, and free from imperfections or discoloration. Provide cast or extruded parts that are rigid, true to pattern, and of ample weight and thickness. Provide cast or extruded parts that are properly fitted, filed, ground, buffed and chased to provide finished surfaces and joints free of imperfections. Make thickness on cast parts not less than 1/8 inch / 3.175mm.

7.3.6 为灯具的电器部件提供方便安装、替换的安装配件，在更换电气附件的时候可以不必将灯具卸下。

Provide housings for fixtures that make electrical components easily accessible and replaceable, without removing the fixture body from its mounting.

7.3.7 材料的选择应满足其用途，特别是热力强度与耐力。

Materials shall be chosen with regard to their suitability for the use to which they will be put, particularly in respect of their thermal mechanical strength and durability.

7.4 抛光（喷涂）表面FINISHES

7.4.1 以确保获得持久耐用的表面的方式制作抛光表面。抛光 喷涂前，利用可行的化学方法热处理清洁表面，进行防腐（磷化处理）处理，确保正离子喷涂。除了镀铬或者 不锈钢的部分，为提供裸露的金属表面（黄铜、青铜和 铝等）和一体化铸件提供高等级的聚异丁烯或环氧透明的表面处理。铝表面要经过防腐的表面氧化处理。在经过完整的压铸、焊接等工艺之后，对于用于室外的钢板的外壳进行磷化处理，或者镀锌镀铬防腐处理的。提供 的外壳的最小厚度要求如下：  
热镀锌处理 .0005 英寸或0.0127毫米  
镀铬处理 .00015 英寸或0.00381毫米

Apply fixture finishes after fabrication in a manner that assures a durable wear-resistant surfacing. Prior to finishing, hot clean the surfaces by accepted chemical means, and treat them with corrosion inhibiting (phosphating) treatment to assure positive paint-adhesion. Give exposed metal surfaces (brass, bronze, aluminum and others) and finished castings except chromium-plated or stainless steel parts an even coat of high grade methacrylate lacquer, or transparent epoxy. Anodize exposed aluminum surfaces for corrosion resistance. Make sheet steel fixture housing, and iron and steel parts which have not received phosphating treatment, or which are to be utilized in exterior applications corrosion resistant by zinc or cadmium plating or hot-dip zinc alvanizing after completion of all forming, welding, or drilling operations. Provide minimum thickness of protective coatings:  
a. Hot galvanized zinc coating .0005 inch /0.0127mm  
b. Cadmium plating .00015 inch /0.00381mm

7.4.2 需要电镀处理的部分在电镀时的温度要在可能导致该材料受到损坏的温度之下。

Electroplate parts operated under temperatures injurious to hot-dipped galvanizing.

7.4.3 底板螺丝、门钉，螺母等其它固定、锁定部件需要经过氧化防腐处理。

High corrosion resistant screws, bolts, nuts and other fastening or latching hardware.

7.4.4 除非特别指明，需要按照施工说明和指导，对灯具进行一套完整的、高温烘培的表面颜色喷涂烤漆处理。除非 特别指明，灯具反射罩喷涂白色，反射系数至少达到 86%。除非特别指明，非反射表面要用不具反射性的黑色。在上色前，对于各部分进行表面镭刻处理，以使烤漆附着更好更持久。

Except where otherwise indicated provide fixtures with a final synthetic, high-temperature baked enamel coating of color and finish as specified or directed. Unless otherwise specified, provide white baked enamel reflective surfaces, with a minimum reflectance of 86%. Unless otherwise specified, provide matte black non-reflective surfaces. Prior to painting give all parts proper etched surface preparation to assure paint adherence and durability. See paragraphs above.

7.5 灯具配线FIXTURE WIRING

7.5.1 在荧光灯灯座、辅助运行和启动装置之间提供的配线要与经过核准的镇流器的导线的载流量相当，或大于该载流量，并具有同等或更好的绝缘和抗热能力。灯具的内部配线有一个最小容量。连接部位要由经过核准的、符合机械绝缘要求的金属弹簧片连接器构成，以适应该连接部位的温度和电压。

Provide wiring between fluorescent lamp holders and associated operating and starting equipment of similar or heavier gauge than the leads furnished with the approved types of ballasts and having equal or better insulating and heat resisting characteristics. Provide internal wiring of fixtures containing a minimum number of splices. Make splices with approved mechanical insulated steel spring type connectors, suitable for the temperature and voltage conditions to which the splices

7.5.2 光源灯座接线端子和其它附件之间的接线要采用灵活的 便于手工操作的方式，并且要保证电气和机械上的安全，不得有松脱的现象。光源灯座和其它附件之间的接线数目不得超过该附件的设计接线数目。

Make connections of wires to terminals of lamp holders and other accessories in a neat and workmanlike manner and which are electrically and mechanically secure, with no loose strands protruding. Provide a number of wires extending to or from the terminals of a lamp holder or other accessory that does not exceed the number which the accessory is designed to accommodate.

7.5.3 提供的电线管不得有凸起、粗糙或尖锐的边缘。在穿设 电线时容易引起电线损伤的部位，应设置环形衬套，使电线和电线管的接触部位变得光滑。

7.6.7 在适当的地点，电气工程师应与控制系统的制造商保持联系以保证控制系统与控制器相容。投标公司同时也应提供必要的如损耗数据以使弱光器与接触器达到合适尺寸。

Where appropriate, the Bidding Contractor shall also liaise with the selected lighting control system manufacturer to ensure compatibility between control gear and

7.5.4 在软性电线的起始端和末端安装绝缘衬套。

Install insulated bushings at points of entrances and exit of flexible wiring.

7.6 镇流器BALLASTS

7.6.1 为荧光灯提供的镇流器要与供电回路的特性配套，同时要与指定的光源配套。除非向承包商特别指明，否则提供的镇流器符合下列特性：

- 快速启动 功率
- 因数 ≥ 0.9
- 镇流器因数 ≥ 0.9
- 总谐波含量 ≤ 10%
- 电流浮动因数 ≤ 1.7
- 符合 UL 标准
- 噪音指数 A
- 多光源快速启动镇流器应为一个系列产品
- 通过中国强制产品 CCC 认证及 CE 认证

Provide ballasts for fluorescent lamps that are suitable for the electrical characteristics of the supply circuits to which they are to be connected, and which are suitable for operating the specified lamps. Provide ballasts which, unless specifically indicated to the contrary, have the following characteristics:

- a. Electronic rapid start
- b. power factor ≥ .90
- c. ballast factor ≥ .90
- d. total harmonic distortion ≤ 10%
- e. lamp current crest factor ≤ 1.7
- f. UL Class P
- g. Sound Rating A.
- h. Multi-lamp rapid start ballasts shall be of the series sequence type.
- i. Has China Compulsory Certification(CCC) and Conformite Europeenne (CE)

7.6.2 为同种灯具提供相同的镇流器。

Provide identical ballasts within each fixture type.

7.6.3 应用在指定光源上的镇流器要有最低的噪音指数，并将其噪音指数明确标识。在工程验收前如果设计师或工程人员发现镇流器噪音过大无法接受，则要无偿更换不满意的镇流器。如果提供的镇流器的噪音指数超过A，应向设计师书面指明。

Provide ballasts having the lowest sound-rating available for the lamps specified and clearly showing their respective sound ratings. Replace ballasts found by Architect or Engineer to be unduly noisy, without charge, prior to acceptance of the job. Inform Architect in writing if ballasts with a sound rating other than A are to be provided.

7.6.4 经过核准的镇流器厂商

- 1. PHILIPS
- 2.OSRAM
- 3.GE
- 4.TRIDONIC

Approved Ballast Manufacturers

- 1. PHILIPS
- 2.OSRAM
- 3.GE
- 4.TRIDONIC

7.6.5 若承包商建议其它制造商，应附上典型的案例以供审核。

Other manufacturers may be suggested by the Contractor accompanied by full electrical characteristics as an alternative for consideration and approval.

7.6.6 所有必须的控制器和变压器应安装在照明灯具内除非显示其位置是遥控的。所有的这些控制器应高质量的完成并符合相关的法定要求。同时与灯泡的规范相容，按照制造商的说明书可安装及布线。

All necessary control gear and transformers shall be mounted within the luminaire unless shown as being located remotely. All such gear shall be of good quality construction, shall comply with all relevant statutory regulations, shall be compatible with the lamps specified, and shall be mounted and wired in accordance with the manufacturers' instructions.

High power LED fixture shall be thermally protected using one or more of the following thermal management techniques: metal core board, gap pad, and/or internal monitoring firmware.

where appropriate, the bidding contractor shall also advise with the selected lighting control system manufacturer to ensure compatibility between control gear and the control system. The Bidding contractor shall also provide all necessary data regarding gear losses etc, to enable dimmers/contactors to be sized correctly.

7.6.8 变压器应有稳定的输出电压（11.4V-22.8V），在不同的负荷下通常设置在（12V-24V）。

Transformers shall have a stable output voltage of 11.4V/22.8V, under varying loads, where the output voltage is nominally quoted at 12V/24V.

7.6.9 除非特别注明，所有的变压器可以通过遥控灯光控制系统来调光。

Unless otherwise stated, all transformers shall be electronic and suitable for dimming on their primary side via a thyristor controlled remote lighting control system.

7.6.10 当控制件或变压器被安装在远处，应仔细确保其发出噪音被控制在最小的范围内。其中的一些声学的特殊规范会专门单列。

Where gear or transformers are installed remotely, care should be taken to ensure that any audible sounds generated by control gear, or by lamp filaments via control gear are kept to a minimum. Where this is particularly crucial, detailed acoustic requirements are included in the Specific Conditions.

7.6.11 尽可能用电子控制器。

The control gear will be electronic wherever possible.

7.6.12 如果是可调节的镇流器，一定DSI型，它允许的调节荧光灯的亮度最小可达到 5% 而不会忽明忽暗。

When dimmable ballasts are called for in the specification, they will be of the DSI type, permitting dimming of fluorescents to a minimum level of 5% without flickering.

7.6.13 所有的设备应具有应付主要的故障与内部干扰防护。

All equipment shall be protected from unexpected mains failure, and mains borne interference.

7.7 灯座LAMP HOLDERS

7.7.1 提供的白炽灯和气体放电灯的灯座要为带有铜质螺口的陶瓷灯座，灯座额定功率为 660瓦；不准使用塑料或金属灯座。

Provide incandescent and HID lamp sockets with porcelain housings over copper screw shells, with medium base sockets rated at 660W. Plastic or metal sheet sockets are not approved.

7.7.2 为荧光灯灯具提供额定功率为 660W 的白色抗热灯座。荧光灯灯座应保证工作在 300V 断路的情况下依然保持安全，即当光源从灯座上移除时依然安全。

Provide fluorescent fixture sockets that are white, of heat resistant plastic and rated at 660W. Fluorescent lamp sockets operating with an open circuit voltage in excess of 300 volts shall be of the safety type which open the supply circuit when the lamp is removed from the sockets.

7.7.3 快速安全地为灯具安装光源灯座。

Rigidly and securely attach lamp holding sockets to the fixture enclosure or husk.

7.7.4 当一条回路包含一系列光源时，应为每个光源提供一个绝缘接头。

Where pull-chains are included, provide an insulating joint.

7.7.5 灯座要适合指定的光源，使光源能安装在正确的位置上，满足光学需要，并能保证与透镜、反射器、滤光镜和遮光板的正确位置关系。

Provide sockets suitable for specified lamps, and set to position the lamps in optically correct spacing and relationship to lenses, reflectors, filters, and baffles.

7.8 ED灯具和灯 LED FIXTURE AND LAMPS

7.8.1 灯的光通须维持在通过LM-80测试。

Lumen maintenance of lamps shall be tested according to LM-80.

7.8.2 LED灯具须在稳定的、精心调控的电流强度下运行，不应在超过其额定电压或额定电流的情况下超负荷运行。

The LED fixture shall be operated at constant and carefully regulated current levels. LEDS shall not be overdriven beyond their specified nominal voltage and current.

7.8.3 高功率的LED灯具须采用以下一种或一种以上的热防护技术：金属夹心板、gap pad(导热填充材料)、内部监测固件。

All LED fixtures (100% of each lot) shall undergo a minimum eight-hour burn-in test during manufacturing.

7.8.19 厂商须提供某个独立的测试实验室测量获得的光学性能、极性图和相关的照度、亮度数据。

- 7.8.4 由于需要在潮湿的环境中使用，LED灯具本身须密封，并在适当的环境中进行检测，而不是依靠附加的外壳达到这样的效果。
- For wet and damp use, LED-based fixture itself shall be sealed, rated, and tested for appropriate environmental conditions, not accomplished by using an additional housing or enclosure.
- 7.8.5 LED 灯具灯体应具有良好的散热性，将灯具内部的热量散发到外部环境中。
- LED fixture housing shall be designed to transfer heat from the LED board to the outside environment.
- 7.8.6 所有与 LED 装置硬连线的连接须采取极性的保护，在 这些连接被扭转或缩短的安装过程中，须提供高压保护。
- All hardwired connections to LED fixtures shall be reverse polarity protected and provide high voltage protection in the event connections are reversed or shorted during the installation process.
- 7.8.7 所有与LED系统的安装控制相关的产品，包括外围设备和软件，须为同一公司生产。
- All products associated with installation and control of the LED system, including peripheral devices and software are to be provided by a single manufacturer.
- 7.8.8 电源 / 数据的供应输出须有限流保护。
- Power/data supply outputs shall have current limiting protection.
- 7.8.9 电源 / 数据供应须有错误配线保护。
- Power/data supply shall provide miswiring protection.
- 7.8.10 电源 / 数据供应须有功率因数修正。
- Power/data supply shall have power factor correction.
- 7.8.11 电源 / 数据供应须为低压线提供 conduit-ready 和clamp-style 两种连接方式。
- Conduit-ready or Clamp-style connections for the low- voltage wiring.
- 7.8.12 LED灯具中使用的所有LED颗粒须为著名LED厂家生产的高质量高亮度 LED。
- All LEDs used in the LED fixture shall be high brightness and proven quality from established and reputable LED manufacturers.
- 7.8.13 LED 系统的生产厂商须采用先进的 LED 封装方法以保障LED 色彩的一致性。
- Manufacturer of LED systems shall utilize an advanced production LED binning process to maintain color consistency.
- 7.8.14 LED灯具须为经UL（美国保险商实验所）列出或分类的，或经过认可的同级品。
- LED fixture shall be ul listed or UL classified, or approved equal.
- 7.8.15 电源 / 数据供应须为 UL（美国保险商实验所）列出的 1 类或 2 类配线，或经过认可的同级品。
- Power/data supply shall be UL listed for class 1 or class 2 wiring,or approved equal.
- 7.8.16 厂商须提供产品的技术支持文档以便于第三方的管理、调整。
- Manufacturer shall be able to provide supporting documentation of the product meeting third party regulatory compliance.
- 7.8.17 厂商须保证产品符合所做的设计以及各项生产检测，其中包括： design FMEA, process FMEA, environmental engineering considerations and laboratory tests, IEC standards and UL/CE testing。
- Manufacturer shall ensure that products undergo and successfully meet appropriate design and manufacturability testing including design FMEA, process FMEA, environmental engineering considerations and laboratory tests, IEC standards and UL/CE testing.
- 7.8.18 所有的 LED 产品在生产过程中须经过至少 8 小时的点亮测试。
- 7.10.1 铝反射器  
提供的反射器、反射罩或遮光板使用12#的反射铝材、厚度不小于0.057英寸/1.709毫米（15号），完全没有旋纹等加工的痕迹，没有因为铆接或其它装配技术引起的锯齿或其它痕迹，在安装后不能看见铆钉、弹簧或其它五金部件。  
按照要求提供其它的铝质反射器，其形式与表面处理方式按照施工图和本说明的要求制作。除非特别指明，提供的反射罩必须无污点、刮痕或者缺口等可能影响反射效果的缺陷。

Manufacturer shall provide optical performance, polar diagrams, and relevant luminance and illuminance photometric data based on test results from an independent testing lab.

#### 7.9 光源LAMPS

##### 7.9.1 在施工期间，提供所要求的光源，包括其它单位提供的灯具。

Provide electric lamps as required, during construction, including lamps for fixtures furnished by others.

##### 7.9.2 根据下面灯具说明的要求，为所有灯具安装全新的光源，在施工完成时，应保证所有灯具按照要求配备的合适的光源，并且处于正常的工作状态。

Provide a complete set of new lamps, as specified in Fixture Descriptions below, in each fixture, at the completion of the Work, leaving fixtures and lighting equipment completely lamped and/or in normal operating condition.

##### 7.9.3 除非特别指明，否则应提供如下所述的光源：

除非特别指明，为四寸荧光灯具提供28W T5 灯管，初始光通不少于 2900 流明，相关色温 3000 K。  
除非特别指明，为白炽灯具提供磨砂泡壳光源。除非特别指明，管状石英灯应采用表面磨砂处理。一般，在公共区域使用的A或PS型光源的使用寿命要求不小于2500小时。除非特别指明，不使用包含一系列发光二极管的白炽灯光源，无论作为主体光源还是作为一个底衬 插在灯座中。  
对于其它灯具，提供指定的光源，如果没有指定，则按照厂商的规定使用光源。如果本说明不完整，请向设计师要求澄清。

Unless specified otherwise, provide lamps as follows:

For 4' fluorescent fixtures provide 28 watt T5 type, which deliver not less than 2,900 initial lumens for straight lamps, with 3,000° K correlated color temperature, unless otherwise indicated.

For incandescent fixtures provide inside-frosted lamps unless otherwise indicated. For tubular quartz lamps provide frosted, unless otherwise indicated. General use Type A or PS lamps located in service area shall be rated at 2500 hours or greater lamp life. Unless otherwise specified, incandescent lamps containing a series connected diode either as an integral part of the lamp, or as a button inserted into the socket are not acceptable.

For other fixtures, provide lamps as specified, or if not specified, as rated by the manufacturer. If specification is not complete, contact Architect for clarification.

##### 7.9.4 以下为经过核准的光源厂商：

1. CREE
2. Philips
3. Osram
4. Nichia

除非特别说明，须采用上述经过核准的光源厂商的光源，所有光源显色指数须达到80以上，在所提交的资料中，必须包括色温、显色指数、防护等级、发光效率、平均寿命、耗电功率等技术指标。

The following lamp manufacturers are approved:

- a. 科瑞
- b. 飞利浦
- c. 欧司朗
- d. 日亚

Unless otherwise specified, should use above lamp manufacturers, Ra rate shall be min 80.And submit document shall included colour temperature, Ra,IP,life expectancy,power consume etc.

##### 7.9.5 白炽，钨卤灯不应被操作，除非首次测试或验收阶段。

Incandescent and tungsten halogen lamps shall not be operated other than for initial testing, prior to final inspection.

##### 7.9.6 由制造商制定名称与目录号的光源将被选为照明灯具用。

Lamps are specified by manufacturer' s name and reference number. These lamps have been selected for use within the luminaires specified.

##### 7.9.7 在能产生同样的颜色效果，色度，寿命，光度，尺寸，形状，及符合规范的大致要求下才可考虑替换光源。

Alternative lamps shall only be considered if possessing the same colour rendering, colour temperature, life expectancy, lumen output ,size.shape and general performance as the specified item.

#### 7.10 反射器REFLECTORS

##### 7.11.3 为嵌入式白炽灯具提供可以作为天花板装饰构件的安装盘，调整其尺寸以保证灯具可靠安装，并使安装盘能与天花板紧密结合。

Provide face plates of recessed fixtures which open for access to the interior of the fixture, serve as a ceiling trim, and are positively held to the fixture body by adjustable means that permit the face plate to be drawn up to the ceiling as tight as necessary to insure complete contact of face plate with ceiling surrounding

	<p>安装后，必须看不到铆钉、弹簧或 其它五金组件。</p> <p>Aluminum Reflectors Provide reflectors and reflecting cones or baffles fabricated from #12 aluminum reflector sheet, .057 inch / 1.709mm (15 gauge) or heavier; and absolutely free of tooling marks including spinning lines, and free of marks or indentation caused by riveting or other assembly techniques. No rivets, springs, or other hardware shall be visible after installation. Provide other aluminum reflectors where required, and formed and finished as noted on drawings and elsewhere in the specifications. Provide only reflectors free from blemishes, scratches, or indentations which would distort their reflective function. No rivets, springs, or other hardware shall be visible after installation</p>
<p>7.10.2 反射器表面喷涂</p>	<p>在喷底漆层和涂层前，反射器要完全加工完毕。荧光灯灯具的反射器和反射体需要使用钢制、需要经过烤漆镀白色瓷釉并抛光、需要达到指定底厚度和合适的底漆及涂层，以符合下面的要求和试验的要求。 仅在对反射罩的特性存在争议的情况下才进行试验。在承包商的保险期内或之前的任何时间都可能要求进行试验。如果需要试验，则试验费用由承包商承担。反射罩如果不符合本说明中所要求的标准，承包商应该负责将其更换为符合要求的产品。</p> <p>Painted Reflectors Provide painted reflectors completely formed before application of primer and enamel color coat or coats. Make reflectors and reflector bodies for fluorescent lamp fixtures, having baked-on white synthetic enamel finish, of steel, of the thickness specified or noted and given a suitable primer and white color coat or coats, applied to meet the following requirements and tests described below. Tests will be required only in case of dispute about reflector characteristics. Tests may be required at any time before or during Contractor's guarantee period. Contractor will pay the cost of tests, if required. Reflectors which do not meet the criteria expressed here will be replaced at Contractor's expense, with reflectors meeting specified requirements.</p>
<p>7.10.3 试验</p>	<p>初始反射率不得低于86%；暴露在空气中100小时后，反射率不得低于 85%，表面涂层没有可见的颜色变化。 遵照 ASTM 的 D-523-T 程序 A 测试方法，最小达到 80 的镜面光泽。 暴露在硫化氢或者二氧化硫中48小时后无任何变黄或起泡现象。 室温下，在5%氢氧化钾溶液中放置四小时，没有超过15%的光泽损失。 室温下，在 5%的苏打水中放置 24 小时无反应。 在 100 degrees F 条件下，在湿度为 100%的环境中放置100 小时（Cook Box Test）无起泡或其它反应。 20%盐水喷射 150 小时不会变的朦胧。塔尔博特磨损 试验（Talbor Abrasion Test）中，用 CS-10 的转轮每 三百转的损失不超过 15 克。</p> <p>Tests Provide an initial reflection factor not less than 86%. After 100 hours exposure to a fade-o-meter,reflection factor may not be less than 85%, and finish can show no visible color change. Specular Gloss, in accordance with ASTM Method D-523-T, Procedure A, may be a minimum of 80. Exposure for 48 hours to either hydrogen sulfide or sulfur dioxide may cause no more than slight yellowing and no blistering. A spot test with 5% potassium hydroxide at room temperature for four hours may show no effect other than a loss of not over 15% gloss. Contact with 5% soda ash solution at room temperature for 24 hours may show no effect. Exposure to 100% humidity at 100 degrees F., for 100 hours (Cook Box Test) may show no blistering or other effects. Salt spray (20% sodium chloride) for 150 hours may cause no breakdown of film. Talbor Abrasion Test may show no more than 15 mg. per 300 cycles, using CS-10 wheel.</p> <p>埃力克松撞击试验（EricksonBumpTest），在撞裂前显示最小变化为 3 毫米。</p> <p>Erickson Bump Test may show a minimum of 3 millimeters of penetration before cracking.</p> <p>施华德动力试验（Sward Harness Test），显示最小值 为 30。</p> <p>Sward Harness Test may show a minimum of 30.</p>
<p>7.11 透镜 / 灯箱 / 装饰材料LENSES / FACE PLATES / TRIM</p>	<p>7.11.1 如果说明中指出使用塑料透镜，在没有特别指定透镜材料的情况下，均须提供纯PC 膠透镜。</p> <p>Where plastic lenses are indicated , provide lenses of polycarbonate,unless otherwise indicated.</p>
<p>7.11.2 将透镜、百叶、或者其它的光学附件安装在可以拆卸移动的框架中，但是一定要安装紧密，以防止移动这些框架的时候将上述光学附件滑落在地。</p>	<p>Make lenses, louvers, or other light diffusing elements contained in frames removable, but positively held within the frames so that hinging or other motion of the frame will not cause the diffusing element to drop out.</p>
<p>7.13.6 在提交报价单之前应向建筑师指出图纸和技术说明中的矛盾。</p>	<p>Bring any discrepancies between drawing and specifications to the attention of the Architect before submitting bids.</p>
<p>7.13.7 为标注了“指定设备”的灯具的透镜和散射器提供备用品。备用品数量应该不小于该灯具总数的 5%。这些备用品 应该妥善包装、明确标识后，转交业主保存。</p>	

	<p>the fixture.</p>
<p>7.11.4</p>	<p>光学系统应总体设计并完善以达到灯具的运行要求，并在相关的灯具规范中列明同时在平面图中注明。</p> <p>The optical systems shall generally be designed and developed to achieve the performance requirements of the luminaire, as specified on the relevant luminaire specification and as detailed on the relevant lighting layouts.</p>
<p>7.11.5</p>	<p>详细的图像数据应转交灯光设计顾问以作评估。</p> <p>Detailed photometric data shall be supplied to the Lighting Consultant for assessment.</p>
<p>7.12 室外照明设备EXTERIOR FIXTURES</p>	<p>7.12.1 提供特殊设计和需要单独加工的室外灯具，其各种部件，包括螺丝、螺钉、铆钉、弹簧和其它细小零件，均需要使用具有耐腐蚀能力的材料制作，或者通过表面喷涂处理以达到同样的耐腐蚀能力。</p> <p>Provide fixtures designed and manufactured specifically for outdoor service. Make components, including nuts, bolts, rivets, springs, and similar parts, of materials of effective corrosion resistance, or of materials which have been subjected to finishing treatment which will assure such resistance.</p>
<p>7.12.2</p>	<p>提供使用在室外或设计中指定的潮湿场所的灯具，需要具有严格的防水性能以防止水气侵袭灯具的电气部件和内部的透镜、散射器或玻璃泡壳。</p> <p>Provide fixtures for use outdoors, or in areas designated as damp locations, which are suitably and effectively gasketed to prevent access of moisture into electrical components or enclosing diffusers, lenses or globes.</p>
<p>7.12.3</p>	<p>灯具的金属部件，需要按照指定要求进行表面喷涂处理，对于使用在室外或者潮湿场所的灯具，其金属部件的喷涂处理需要使用具有和环氧树脂罩面具有同样效果的材料，以达到防潮防腐的功能。</p> <p>Provide metal parts of fixtures, which are specified as requiring painting, for use in outdoor or damp locations, which are painted with suitable weather and moisture resisting qualities equal to epoxy-based coatings.</p>
<p>7.12.4</p>	<p>对于没有特殊指出要求的室外照明设备的铝金属部件，使用经过阳极化处理的铝材。</p> <p>Provide anodized aluminum for aluminum parts of exterior fixtures which are not specified as requiring a painted finish.</p>
<p>7.13 照明设备说明FIXTURE DESCRIPTIONS</p>	<p>7.13.1 提供符合图纸中或者后面要求的标准和规格的照明设备。承包商应该对建筑的天花板高度与所有灯具的匹配情况 进行验证。</p> <p>Provide fixtures which conform to the above standards and criteria, as indicated on the drawings, and as indicated below. Contractor to verify ceiling conditions for all fixture types.</p>
<p>7.13.2</p>	<p>给出的产品目录和编号是为了明确灯具的基本类型和规格，这些目录和编号不是技术说明的一部分，也不是必须按照它们来订购产品。承包商应该提供满足灯具说明 中所有技术条件的灯具。</p> <p>Catalogue or series numbers, when shown, are intended to provide assistance in establishing general type or category of lighting fixtures. These are not part of specification nor are they to be used to order fixtures. Contractor shall provide a fixture that meets the complete fixture description.</p>
<p>7.13.3</p>	<p>给出的设备预算是需要支付给电气承包商的灯具的费用，以人民币计算。预算不包括光源、税金、运输费用、处理费用、安装费用和承包商的利润。</p> <p>Allowances, when given, cover the cost to the Electrical Contractor, in RMB, of the lighting fixture only. Allowances do not include lamps, taxes, delivery, handling, installation or Contractor's overhead or profit.</p>
<p>7.13.4</p>	<p>包含技术说明的简化设备目录只为概况性说明，不属于技术规范的一部分。</p> <p>Standard fixture catalogue cuts included with this specification section are for general information only, and are not a part of the specification.</p>
<p>7.13.5</p>	<p>此说明中提供的定制灯具设计图纸和标准灯具的特殊用法设计图纸是此说明的主要部分，它们和灯具自身的说明共同组成该灯具的完整使用、安装说明。</p> <p>Custom fixture design drawings and/or modification drawings for standard fixtures provided with the specification are an integral part of the specification and are to be used in conjunction with the fixture descriptions as the full specification for the affected fixture types.</p>
<p>7.23</p>	<p>中标的制造商应递交 2 份施工图给照明顾问及委托方（尺寸以 mm 为单位）做施工前必要的审核。</p> <p>The successful Manufacturer shall submit two copies of all working drawing(s) to the Lighting Consultant, (dimensioned in mm) for necessary approvals prior to fabrication.</p>

- Provide “attic stock” of replacement lenses and diffusers for the following fixture types: to be determined. Quantity shall be equivalent to either 5% of fixture type count or (2), whichever is greater. Attic stock is to be suitably boxed and marked and turned over to the owner as directed.
- 7.13.8 在灯具、光源、镇流器或其它电气设备所涉及的技术标准和规范，如未能达到国际或国家目前执行的最新标准时，投标方必须使设计及选用的设备和材料符合最新的国际和国家标准，并提供采用国际和国家的最新版本的标准、规范资料。不论本技术要求中是否列出，所有与本工程有关的中国国家标准和规范以及地方有关规定都必须遵守。所有将用于本工程的材料，必须符合设备厂商所在国家的规范、标准以及生产厂的生产工艺要求和技术应用要求。当国外规范、标准与中国国家规范、标准相矛盾时，以中国规范、标准为准。
- When technical standards and specifications of lamps, lighting, ballasts or other electrical equipment involved, failed to meet the latest standards such as international or national current implementation, the bidder must make the design and select the equipment and materials to meet the latest international and national standards, and provide the latest version of the international and national standards, standardized data which refer to .Whether the technical requirements are listed, all the Chinese national standards and norms, and local regulations related to this project must comply.All equipment and materials will be used in this project must comply with the national specifications ,atandard and manufacturer’s production process requirements and technical applications.When foreign norms, standards different with Chinese national norms, standards ,,Chinese national norms prevail
- 7.14 从特定的制造商的产品目录所选择的作为标准项目的设备必须包含效果；维护；质量；美学等方面的规范参数。
- Equipment selected as a standard item from a particular manufacturer's range has been specified with a view to performance, optics, maintenance, quality, aesthetics etc.
- 7.15 如果同时有替代设备提供参考，必须同时附有技术与图像数据并及时转交照明顾问以对他们作出精确的评估。如果要求不同的照明标准，灯具制造商应对产品加以改进以达到规范要求的标准。
- Should alternative equipment be offered, full technical and photometric data shall be supplied to the Lighting Consultant in the specified format to enable its accurate assessment. If any variants of standard luminaires are required, the manufacturer of the standard luminaire shall develop these, unless otherwise specifically stated, and shall be manufactured to the same standards as the equivalent standard luminaire.
- 7.16 按规定，所有施工图上任何有计划的变更，尺寸标明单位 mm 的 2 份复印件应提交给照明顾问作施工前的审核。
- If specified, two copies of all working drawings of proposed variants, dimensioned in mm, shall be supplied to the Lighting Consultant for approval prior to fabrication.
- 7.17 除此之外，制造商有责任确保遵从相关的标准，在其图纸中表明所有的数据并使提供的照明设备完全符合本规范要求。
- Notwithstanding the above, the manufacturer shall remain responsible for ensuring compliance with relevant standards, the accuracy of the information shown on his drawings at all times and for ensuring that the equipment shown fulfills the requirements of this specification.
- 7.18 如果有特殊的灯具要求，该灯具的单独规范复印件将会随后附加在本文件中。
- If any special luminaires and associated equipment are required, these will be the subject of a separate specification, a copy of which will be enclosed with this document.
- 7.19 照明顾问对未经审核的安装的灯具不承担责任。
- The Lighting Consultant cannot accept responsibility for installation of non-approved luminaries.
- 7.20 每件灯具的最终位置及相关的建筑设计详情应在施工图中表明，照明顾问对与图纸位置不相符的安装方法不负责，除非事先同意并备注。
- The final location of each luminaire and where relevant its integration with the architecture shall be as detailed on the construction issue drawings. The Lighting Consultant cannot accept responsibility for luminaires installed in a manner other than intimated in the relevant drawings or as otherwise agreed and minuted.
- 7.21 本规范要求的特殊灯具附件已经设计完成并与指定的制造商协商其特殊功能的效果。当需要时可提供这些附件 的合适的详细规范。
- Special accessories as required by the luminaire specification have been designed and discussed with the specified manufacturer to perform specific tasks. Where required, these accessories have been detailed in the appropriate luminaire specification.
- 7.22 灯光设计顾问的设计图已将其要达到的效果及美学参数表达的很详细，制造商在生产过程中应严格按照这些图纸并达到这些参数。
- The Lighting Consultant’s design intent drawing(s) detail the performance and aesthetic parameters of the luminaire(s). The Manufacturer shall design,develop and manufacture the luminaire(s) generally in accordance with these drawing(s), and in a way which achieves these parameters.
- 8.11 导线接头、接线盒、设备安装孔、变压器、镇流器、开关、控制面板，以及其它有时需要维修和维护的设备，应该容易接近，并且和天花板、灯具固定情况相协调。
- Install equipment such as junction and pull boxes, fixture housings, transformers, ballasts, switches and controls, and other apparatus that shall be reached from time to time for operation and maintenance, to be easily accessible and appropriate for mounting and ceiling conditions.
- 8.12 支撑结构SUPPORTS

- 7.24 灯具设计应考虑安装后易于清洗；维修；更换灯泡。
- The luminaire shall be designed to facilitate ease of cleaning, routine maintenance, lamp changing etc, when installed.
- 7.25 所有安装位置必须详细列在施工图中，包括电缆的入口及灯具的重量（以 kg 为单位）。
- All mounting details shall be clearly shown on the working drawing(s) including electrical cable entry and the weight of the luminaire in kg.
- 8 安装INSTALLATION
- 8.1 安装的灯具必须具备配套光源和其它必要附件，如五金 部件、电气附件、悬索、支撑构件、电缆、电缆管、安 装支架等，以达到安全、完整，保证灯具正常工作。
- Install fixtures complete with lamps, as indicated, and with equipment, materials, parts, attachments, devices, hardware, hangers, cables, supports, channels, frames and brackets necessary to make a safe, complete, and fully operative installation.
- 8.2 查证并提供适合于本工程中灯具，使之与天花板情况相符，并能可靠固定。
- Verify and provide fixtures that are appropriate for the ceiling and mounting conditions of the project.
- 8.3 不接受并且不得安装有瑕疵的或者不满意的灯具。根据建筑师的指导，更换已经安装的不满意的灯具。
- Reject and do not install blemished damaged or unsatisfactory fixtures. Replace imperfect or unsatisfactory fixtures, if installed, as directed by Architect.
- 8.4 在安装过程中保证正确的安装，防止出现光线溢出、灯具变形、凹陷或其它不符合标准的现象。在天花板接缝 和灯具连接处的任何可见部分，都不允许有光线溢出现象。
- Set fixtures, when installed, to be true, and free of light leaks, warps, dents, or other irregularities. No light leaks are permitted at the ceiling line or from any visible part or joint offthe fixtures.
- 8.5 安装说明中指出的规则，或者按照建筑师的指导对灯具裸露部分或者安装杆件进行表面喷涂处理。
- Provide finish for exposed parts or trims as specified so indicated, provide a finish as directed by Architect.
- 8.6 在湿作业、石膏工艺、油漆工艺和灯具安装区域内的清洁工作结束之前，不得安装反光罩、装饰盘、透镜、散射器、百叶和灯具的装饰构件。
- Do not install reflector cones, aperture plates, lenses, diffusers, louvers, and decorative elements of fixtures until completion of wet work, plastering, painting and general clean-up in the area of the fixtures.
- 8.7 在机械、电气和通讯设备用房内灯具，必须在天花板上所有的管道设备安装完成之后再安装灯具。这些房间内的灯具的安装位置应该根据施工现场其它机械、电气设备的安装位置，在施工中确定
- In mechanical, electrical, and telephone equipment rooms, lighting fixtures shall be installed on ceilings after piping and equipment therein has been installed. Exact locations for such fixtures shall be determined at the job site during the course of the Work, in coordination with the mechanical and electrical Work.
- 8.8 根据图纸标注或建筑师的要求的位置及高度安装灯具。
- Mount fixtures at heights and locations indicated on the Contract Drawings, or as required by Architect.
- 8.9 在嵌入式灯具的安装过程中，采用内部填塞或框架保护的方法，防止灯具外壳出现扭曲、安装对位线错位等现象，在安装完成之后，也应保持所有灯具外壳上的安装对位线都保持在同样的位置。所有的固定螺栓应保证能够顺利安装，并在维修时能方便地拆除。灯具螺丝安装孔的螺纹能够保证安全地安装和拆除。
- Adequately protect the housing of recessed lighting fixtures during installation by internal blocking or framing to prevent distortion of sides, or dislocation of threaded lugs, which, upon completion, shall be in perfect alignment and match the corresponding holes in frames or rims. Holding screws shall be inserted freely without forcing, and shall remain easily removable for servicing. Threads intended to receive holding installation and removal of knurled headed screws.
- 8.10 在灯具和设备安装完成时，应该进行试运行，在确保没有任何不足之处之后才能结束。在进行最后的检查时，所有的灯具都应该是干净的，并全部装有光源，并且配备了所有需要的透镜、散射器、反射器、面板、百叶和其它必须的功能组件。承包人在最后检查之前，应该更换所有被损坏的反射器、透镜、散射器、面板或者其它组件。根据图纸标注或建筑师的要求的位置及高度安装灯具。
- Upon completion of the installation, the lighting fixtures and lighting equipment shall be in first class operating order and free from defects in condition and finish. At time of final inspection, all fixtures and equipment shall be clean, fully lamped, and be complete with required lenses or diffusers, reflectors, side panels, louvers, or other components necessary for the function of the fixtures. Any reflectors, lenses, diffusers, side panels or other parts damaged prior to the final inspection shall be replaced by Contractor prior to inspection.
- 8.12.13 如果悬挂设备位于正常的视角范围内，则需要采用与照明设备相协调的表面喷涂处理。
- Provide hanging devices which, if visible from normal viewing angles, exactly match fixture finishes.
- 8.12.14 为每一个悬挂杆件提供安装在天花板上的防护罩，并且采用与照明设备相协调的表面喷涂处理。



- 8.12.1 在需要的场合，为灯具提供石膏框架或固定框架，这些框架应该和他们所安装部位的天花板结构相协调。
- Provide plaster frames or mounting frames for fixtures that require them. Such frames shall be appropriate for the ceiling construction in which they shall be installed.
- 8.12.2 为了保证灯具支撑结构的安全，为其提供必要的五金构件，比如杆件、托盘、石膏框架、悬索和类似的拉杆。所提供的石膏框架须由非铁金属的材料制作，或者是如前所述，经过防腐防锈处理的钢材制作。
- Provide necessary hardware with fixtures, such as stems, plates, plaster frames, hangers and similar items, for safe support of the fixture. Provide plaster frames made of non-ferrous metal, or of steel that has been suitably rustproofed after fabrication, as described above.
- 8.12.3 为灯具提供能满足它们自身重量的支撑结构。
- Provide supports for fixtures that are adequate to support the weight of the fixtures.
- 8.12.4 除非有特殊的说明，应该为这些可见的悬挂设备进行和灯具表面一致的表面喷涂处理。
- Provide visible hanging devices that are finished to match the fixture finish, unless indicated otherwise.
- 8.12.5 在必须满足建筑主管部门提出的防火安全问题时，为灯具提供满足防火等级要求的防护设施。
- Where necessary to meet fire resistance requirements of Building Code authorities, provide enclosures housing recessed fixtures that are constructed to provide required fire resistance rating.
- 8.12.6 提供包括支架、金属铸造件在内的满足必须的刚性和拉伸性要求的附件，以保持安装的灯具排列成整齐的顺序。
- Provide attachment devices including brackets, cast metal shapes with the requisite rigidity and strength to maintain continuous alignment of installed fixtures. Attach fixtures to ceiling supporting members, and do not depend upon lathing, plaster or ceiling tile for alignment or support
- 8.12.7 提供固定在由独立托架或附着在天花板横梁之间的托架悬垂式天花板上的灯具，采用固定基准线或其它有效方式，以保证安装时能保持整齐的顺序。
- Provide fixtures mounted in suspended ceilings that are supported by saddle hangers or the bars attached to runners or between crossbars of ceiling systems. Provide mounting splines or other positive means of maintaining alignment and rigidity.
- 8.12.8 所提供的支撑设施必须经过表面钝化处理，并且事先经过喷涂底漆或油浸处理以达到防腐的要求。
- Provide supporting members that are surface passivated, and which are primed or paintdipped to resist corrosion.
- 8.12.9 提供正确方式锁定的加固装置，使之不需要采用特殊设备就能方便使用或解除，在加固装置中不能使用缠丝的装置。
- Provide fastening devices of a positive locking type, which do not require special tools to apply or remove them. Do not use tie wires in place of fastening devices.
- 8.12.10 承包商为必须的悬挂系统负责，他们应该在说明书的其它部分中确保这些结构构件及安装的可靠性。
- Contractor is responsible for the necessary suspension system; Contractor shall ascertain the structural reliability of supports provided under other Sections of the specification.
- 8.12.11 当房间中采用通过铰链安装的附加反射系统时，应该防止这些反射器从高处跌落。在安装完成之后，应该保证在水平向上 45 度角的范围内看不到这些铰链。
- Attach reflectors to housings by means of safety chains, which shall prevent reflectors from falling. No part of the chain may be visible after installation, when viewed from any angle up to 45 degrees from the horizontal.
- 8.12.12 为悬挂安装或表面安装的灯具提供要求的固定设备和附件，包括螺纹接口、预埋螺栓、校准仪、装饰盒和悬挂杆件。保证灯具按照图纸或现场确定的高度安装并固定，灯具固定位置的允许误差为不超过1/4英寸，或者从地板高度算起，与图纸标注尺寸相比不超过1/2英寸。按照固定的标准布局安装灯具，保证彼此之间形成一条直线。悬挂系统应该符合有关施工及验收标准的要求。
- Provide pendant or surface mounted fixtures with required mounting devices and accessories, including hickies, stud-extensions, ball aligners, canopies, and stems. Uniformly maintain the fixture heights shown on the Contract Drawings or established in the field. The allowable tolerances in individual fixture mounting shall not exceed 1/4 inch and may not vary more than 1/2 inch from the floor mounting height shown on the drawings. Install fixtures hung in continuous runs absolutely level, and in line with each other. Hanging devices shall comply with code requirements
- Shop drawings, samples, test data and certificates shall be submitted for approval in accordance with the requirements of the Contract Documents. Fixtures or other materials shall not be shipped, stored or installed into the work unless prior approval has been received, based upon the submittal of shop drawings, samples, catalogue cuts, test data, certificates or other material submitted for approval. Make modifications to fixtures in accordance with Architect's comments concerning submittals, as a part of the work of this Section.
- 9.2 按照业主对时间进度的要求，向设计师提供厂商名单和预估的供货周期。供货周期应该从制造商接到经过核准的安装施工详图和发包算起，到提交产品结束，以一个星期为衡量单位计算。设计师可以接受或者拒绝任何一个厂商。
- Provide an approved ceiling canopy for each stem, exactly matching fixture finishes.
- 8.12.15 将悬挂杆件保持垂直。
- Place stems to be vertical.
- 8.12.16 为独立安装的荧照明设备提供至少两重支撑结构。当照明设备为成组安装时，除非有特殊说明，否则间隔最小2400毫米厚以提供一套支撑结构。
- Provide at least two supports for individually mounted fluorescent fixtures. Where fixtures are ganged, provide supports at min 2400 mm intervals, unless otherwise indicated.
- 8.13 在真正安装完成之前，要对所有可调节的照明设备进行调试，通常这一程序是在建筑师的监督下完成的，承包商需要为调试工作提供人力和设备。如果因为工期的冲突或者建筑师对先前的调试感到不满意，而在工程结束后要求重新调试，承包商应该在没有任何附加费用的前提下，为业主提供人力和设备。
- Provide manpower and tools for final focusing and adjustment, under Architect's supervision, of all adjustable fixtures prior to Substantial Completion. If the Architect requests additional adjustments after Substantial Completion due to schedule conflicts and/ or unsatisfactory results of earlier adjustments, the Contractor will provide appropriate manpower and tools at no additional cost to Owner.
- 8.14 清洁CLEANING
- 8.14.1 在投入使用之前，应该立即清洁反光罩、反射器、安装盘、透镜、百叶、灯泡和装饰构件。在清洁之后，对透镜部分进行除静电处理，在保证没有手指印和灰尘印记的前提下将它们安装在灯具上。所有保护膜及盖子需于最后检收前拆下。
- Immediately prior to occupancy, clean reflector cones, reflectors, aperture plates, lenses, louvers, lamps and decorative elements. Destaticize lenses after cleaning, installing them to leave no finger or dirt marks. All protective films and covers shall be removed prior to final inspection.
- 8.14.2 在灯具安装结束和最后检查的时候，它们都应该是干净的，没有任何商标、灰尘、污渍和其它不足。在最后检查之前，替换所有破损的和有缺陷的部件，替换或调整在检查中发现的所有不足之处。
- Upon completion of the fixture installation and at the time of final inspection, fixtures shall be clean, and free from marks, dust, spotting or other defects. Replace any broken or defective parts prior to final inspection. Replace or make good all defects revealed by final inspection.
- 8.15 所有回路的电缆尺寸应该由投标公司根据AS3000或有关中国规范决定。双层绝缘 PVC 电缆应该足够了。
- All sub circuit cable sizes shall be determined by the Bidding Contractor in accordance with AS3000 or the local equivalent. Double Insulated PVC cable will be adequate for this purpose.
- 8.16 所有埋在地下或混凝土箱的管道应该是CLASS6地下导管（AS3000或按中国规范）并有种类为“中性”的最小压缩等级（AS2053 或中国规范）。
- All ducts buried direct in ground or concrete encased shall be Class 6 underground conduit (AS3000 or local equivalent) and have a minimum compression rating category of “medium” (AS2053).
- 8.17 所有表面安装的管道从地表到1.8m应该用合适的高热镀锌铁管道或同等系统保护。
- All surface mounted conduits shall be protected from ground level to a height of 1.8m by a suitable hot dipped galvanised steel channel or equivalent.
- 8.18 所有测量应遵从当地安装服务规范要求。
- All metering enclosures shall comply with the requirements of the local Service & Installation rules.
- 8.19 所有控制仪器等应遵从AS3000或中国相关要求。安装标准尺寸由承包商定。
- All control equipment & enclosures shall comply with the requirements of AS3000 or local equivalent. Mounting arrangements and enclosure size shall be determined by the Bidding Contractor.
- 9 提交 SUBMISSION
- 9.1 按照合约文件，承包商需提供安装施工详图、灯具样品、测试数据和授权书以供核准。在承包商提交的安装施工详图、样品、产品样本、测试数据、证书或其它材料得到核准前，灯具和其它材料不可被运输、存储或者安装到本工程中。作为该工程的一部分，承包商应该按照设计师关于提交材料的反馈要求对更改灯具。
- 9.12 如果有要求，要与灯具施工图或灯具样本目录一起提交荧光灯灯具的下列热学测试的相关资料，以证明灯具工作在下列情况下的时候，镇流器可以正常运转不会发生故障：工作电压不超过额定电压的 5%。房间环境温度为 77 华氏度（25 摄氏度）。嵌入安装式灯具的天花板安装孔周围的温度不超过摄氏 45 度。
- Fluorescent fixture manufacturer shall submit, when requested to do so, (with fixture shop drawing or Catalogue Sheet) thermal test data for the fixture to prove that nuisance tripping of the Class P ballast shall not occur when fixture is operating under the following conditions:

- Under the schedule compiled by the owner, a List of Intended Manufacturers and estimated fabrication lead times shall be submitted to Architect. Lead times shall be measured in weeks, beginning from the manufacturer's receipt of approved shop drawings and release, and ending at shipment. Architect shall approve or disapprove each manufacturer.
- 9.3 按照设计师的反馈，承包商应在接到设计师关于所有灯具清单的厂商名单、订货单复印件和厂商的承诺书的反馈之后按业主规定的时间，将订货单和厂商承诺书复印件提交给设计师。订货单和厂商承诺书可以不列出价格，但需要包括一个供货期保证书，如前面说的，以一个星期为衡量单位。该供货期应该是可以充分及时的完成该项工作的时间。
- Under the schedule compiled by the owner, after Contractor's receipt of Architect's response to the List of Intended Manufacturers, copies of purchase orders and manufacturers' acknowledgments for all fixtures specified, conforming to Architect's responses, shall be forwarded to Architect. The purchase orders and the manufacture acknowledgments need not list prices, but shall contain a warranted fabrication lead time, in weeks, as defined above. These fabrication times shall be adequate for the timely completion of the job.
- 9.4 在厂商提供供货保证书之后按业主规定的时间，承包商应该向设计师提供所有灯具的安装施工详图和产品样本。
- Under the schedule compiled by the owner, after receipt manufacturer's acknowledgment of order, Contractor shall forward to Architect complete shop drawings, and/or catalogue cuts for all specified fixtures
- 9.5 承包商在收到设计师关于安装施工详图的否认意见后，按业主规定的时间，将修改后的安装施工详图提交给设计师。
- Under the schedule compiled by the owner, after Contractor's receipt of disapproved shop drawings, revised shop drawings shall be resubmitted to Architect.
- 9.6 在收到标有“核准”标志的安装施工详图后，按业主规定的时间，承包商应向设计师提交每一个灯具的保证出货时间，同时提交灯具样品、说明文本和设计师要求提供的所有的数据。
- Under the schedule compiled by the owner, after receipt of “approved” or “approved as noted” shop drawings, Contractor shall forward to Architect a warranted shipment date for each specified fixture, as well as forwarding samples, texts, or any outstanding data required for approval.
- 9.7 承包商如果没有及时得到设计师的反馈，而这将会对供货时间产生影响时，有义务就这一问题提醒设计师的注意。
- The Contractor shall call to the attention of the Architect any submittals that have not been returned to him in a timely manner and that might effect the appropriate delivery of fixtures.
- 9.8 除了那些在样本列出的标准的、未经更改的、有详细说明的非定制灯具外，应该提交每一种灯具的安装施工详图，经过设计师认可后，这类样本可以替代安装施工详图。按照下述标准提交安装施工详图：一份硫酸纸原图、四份蓝图、九份样本页面副本。
- Submit shop drawings for each type of fixture, except where specified fixtures are standard, unmodified,off-the-shelf units, fully described by catalogue cuts. If allowed by Architect, such catalogue cuts may be substituted for shop drawings. Submit shop drawings in the form of one (1) reproducible and four (4) prints, or catalogue sheets in nine (9) copies
- 9.9 在安装施工详图中，标明灯具材料、表面喷涂情况、金属厚度、总体和细部尺寸、大小、电气及机械连接情况、搭扣、焊接、接缝、完整的形态、其它工程的供应情况和类似的信息，包括吊顶安装构造在内的有关细部固定方式。标明灯具的所有细节，包括厂商关于接线、镇流器、遮光罩、开关和导线的型号，以及可调灯具的瞄准和锁定装置。如果页面中的资料没有涉及不同金属连接处的防止电解腐蚀的可靠的绝缘材料的类型、程度，要在附加图纸中标明。
- Indicate on shop drawings, materials, finishes, metal gauges, overall and detail dimensions, sizes, electrical and mechanical connections, fasteners, welds, joints, end conditions, provisions for the work of others, and similar information. Include pertinent mounting details including hung ceiling construction. Indicate complete details of the fixture, including manufacturer's catalogue numbers for sockets, ballasts, light shields, switches and type of wiring, and targeting and locking devices for adjustable fixtures. Indicate type and extent of approved inert insulating materials to prevent electrolytic corrosion at junctions of dissimilar metals shall be supplemented by additional drawings if information or descriptions listed above are not included in the sheets.
- 9.10 按照设计师要求的格式和数量提供由权威检测部门检测的灯具光度数据。在提交厂商资料的同时，提交标准、非定制灯具的光度数据。光度测试试验和报告应按照IES规定的程序进行。
- Submit independent laboratory photometric data in the directed number of copies and in format as directed by the Architect. Photometric data shall be submitted for standard, off-theshelf units, at the time the manufacturer's cuts are submitted. Photometric testing and reporting shall conform to IES procedures.
- 9.11 厂商的样本页面应包含电气特性参数、工作温度参数、噪音水平参数、固定方式，已经经过 UL 认证的适用光源列表。
- Manufacturer's catalogue sheets shall indicate input and load electrical characteristics, ambient temperature rating, noise level rating, mounting methods and UL listing for use with required lamp.

Voltage not exceeding 5% above nominal line voltage.

Room ambient of 77 degrees Fahrenheit.(25 degrees Celsius).

Maximum ceiling cavity ambient temperature for recessed installation not exceeding 45 degrees Celsius.

## 10 产品的运输、储存和管理PRODUCT DELIVERY, STORAGE AND HANDLING

### 10.1 灯具及其组件应该严格按照核准好的安装施工详图、样品、授权书和产品目录进行装配和穿线后，运输到施工现场，搬运时必须小心，以免损伤灯具。

Lighting fixtures and their component elements shall be delivered to the job site assembled and wired to the greatest extent practical, in strict accordance with the approved shop drawings,samples, certificates and catalogue cuts, and shall be handled in a careful manner to avoid damage.

### 10.2 灯具上裸露的喷涂表面在组装、运输、储存和搬运的时候应该有保护措施。交付的灯具应与经核准的样品完全一致。有损伤的材料应该被修复或者替换。

Exposed finishes shall be protected during manufacture, transport, storage and handling. Delivered materials shall be identical to the approved samples. Materials which become damaged shall be repaired and/or replaced as directed.

### 10.3 灯具放置在整洁、干燥的地面上，用覆盖物遮盖好，并且按照灯具类型和安装位置做好标记。

Fixtures shall be stored under cover, above the ground, in clean, dry areas, and shall be tagged and/or marked as to type and location.

### 10.4 交付的灯具应该包含配线、插座、驱动器、电源、镇流器、灯罩、配线管、透镜及每种灯具安装所必需的其它附件。

Delivered fixtures shall include wiring, sockets, drivers,power supply,ballasts, shielding, channels, lenses and other parts and appurtenances necessary for fixture installation of each fixture type.

照明器具一览表(分类) LIGHTING FIXTURE SCHEDULE (BY TYPE)

序号 ITEM	基本信息 GENERAL INFORMATION			光源规格 LIGHT SOURCE SPECIFICATION				外观形状 DIMENSIONS	灯具规格 FIXTURE SPECIFICATION		控制规格 CONTROL SPECIFICATION	防护等级 PROTECTION RATING	电源规格 POWER SPECIFICATION		灯具数量 QUANTITY	单位 UNITS	总功率 (W) TOTAL VOLTAGE	备注 NOTES
	灯具编号 FIXTURE REF	灯具类型 FIXTURE TYPE	瓦数(W) WATTAGE	光源类型 SOURCE	单颗功率(W) UNIT WATT	光源色温(K) COLOUR TEMP	显色指数 (Ra) COLOUR RENDERING	尺寸(mm) SIZE	光束角(°) BEAM ANGLE	光通量(lm) LUMEN FIXTURE	控制类型 CONTROL TYPE	防护等级 (IP) IP RATING	输入电压 (V/DC/AC) INPUT VOLTAGE	功率因素 POWER FACTOR				
1	CB01b	LED柔性灯带	9.6	LED	--	3000	80	12.2*12	120	65lm/W	ON/OFF	IP66	DC24V	0.95	122	米	1405.44	
2	CB02b	LED柔性灯带	12	LED	--	3000	80	12.2*12	120	65lm/W	ON/OFF	IP66	DC24V	0.95	58	米	835.2	
3	CB04b	LED线性灯	18	LED	--	3000	80	1220*25*49	20*40	61lm/W	ON/OFF	IP66	DC24V	0.95	47	米	1015.2	
4	CB05b	LED线性洗墙灯	31	LED	--	3000	80	1220*25*70.5	20*40	78.3lm/W	ON/OFF	IP66	DC24V	0.95	15	米	558	
5	CB06b	LED线性洗墙灯	28	LED	--	3000	80	1220*25*46	20*90	54lm/W	ON/OFF	IP66	DC24V	0.95	34	米	1142.4	
6	CB08b	LED线性灯	28	LED	--	3000	80	997*60*64	37	56lm/W	ON/OFF	IP20	DC24V	0.95	15	米	504	
7	U01	LED地埋灯	3	LED	--	3000	80	Ø95*97	9	55lm/W	ON/OFF	IP67	DC24V	0.95	2	套	7.2	
8	U02	LED地埋灯	9	LED	--	3000	80	Ø173*128	15	81lm/W	ON/OFF	IP67	DC24V	0.95	38	套	410.4	
9	SP01	LED投光灯	7.7	LED	--	3000	80	81*81*86	wall wash	8.3m/W	ON/OFF	IP66	DC24V	0.95	8	套	73.92	

照明器具一览表说明  
 Lighting Fixture Schedule

1	承包商需提交完整的施工图及样品以供审核。 Contractor to submit complete shop drawings and fixture samples for approval.
2	灯具表内灯具数量为参考数量，实际以图纸为准 The quantity of fixture in the Fixture Specification is for reference only. For actual quantity refer to the drawings.
3	承包商供货时需额外提供5%的光源及镇流器作为备品 (LED灯带按米数的3%提供) Extra 5% light source and ballast should be provided for store.
4	灯具的正确尺寸以实际的样品为准，提交的施工图须含正确的灯具配置以供审核。 Final fixture size shall refer to actual approved sample. All construction drawings shall show fixture accessories for approval.
5	提交完整的施工图及样品以供审核。 Shall submit full set of drawings with samples for approval.
6	电压需经电器工程师校验。 All electrical requirements shall be check by electrical engineer.
7	所有灯具配件、安装臂/灯杆及灯具安装所需附件均由灯具供应商提供。 All lighting accessories, mounting arms / light pole and lighting installation accessories shall be provided by lighting suppliers.

灯具技术规格说明 LIGHTING FIXTURE SPECIFICATION

灯具编号 FIXTURE REF

CBO1b

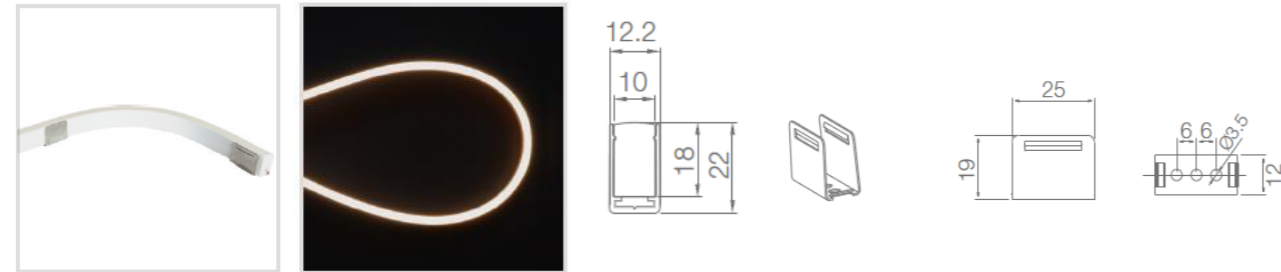
基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED柔性灯带 LED STRIP	9.6W/M	表面安装 SURFACE MOUNT	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温 (K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装 SURFACE MOUNT	--	120	--	65lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	12.2*12	--	树脂 RESIN	灯具本色 ORIGIN	树脂 RESIN

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 (IP) INGRESS PROTECTION	电气保护 (CLASS) ELECTRICAL PROTECTION	防冲击等级 (IK) IMPACT PROTECTION
24V DC	0.95	9.6W/M	IP66	III	--

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具技术规格说明 LIGHTING FIXTURE SPECIFICATION

灯具编号 FIXTURE REF

灯具编号 FIXTURE REF

CBO2b

page 1 of 5

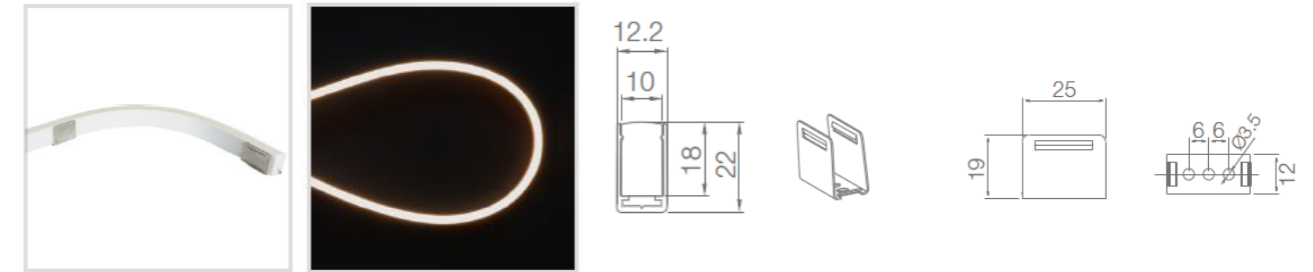
基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED柔性灯带 LED STRIP	12W/M	表面安装 SURFACE MOUNT	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温 (K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装 SURFACE MOUNT	--	120	--	65lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	12.2*12	--	树脂 RESIN	灯具本色 ORIGIN	树脂 RESIN

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 (IP) INGRESS PROTECTION	电气保护 (CLASS) ELECTRICAL PROTECTION	防冲击等级 (IK) IMPACT PROTECTION
24V DC	0.95	12W/M	IP66	III	--

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具编号 FIXTURE REF

### CBO4b

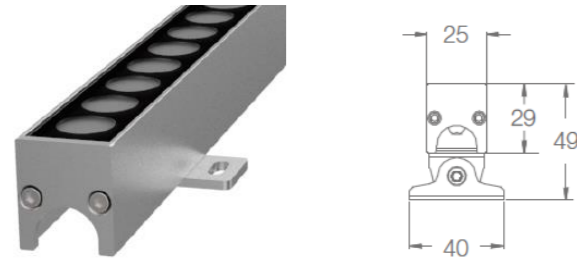
#### 基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED线性灯 LED LINEAR LIGHT	18W/M	表面安装 SURFACE MOUNT	CS	ON/OFF

#### 光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温 (K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIIYA	≤5	≥80

#### 图片资料 IMAGES



#### 灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装 SURFACE MOUNT	--	20°40	--	61lm/W	灯具尾部 TAIL

#### 外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	25*40	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

#### 电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION
DC 24V	0.95	18W/M	IP66	III	--

#### 备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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#### 推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

### 灯具技术规格说明 LIGHTING FIXTURE SPECIFICATION

灯具编号 FIXTURE REF

### CBO6b

### CBO5b

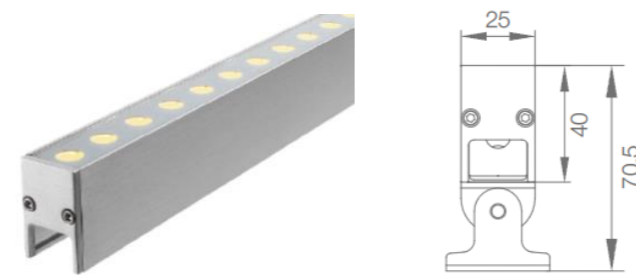
#### 基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED线性洗墙灯 LED LINEAR WALL WASH	31W/M	表面安装 SURFACE MOUNT	CS	ON/OFF

#### 光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温 (K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIIYA	≤5	≥80

#### 图片资料 IMAGES



#### 灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装 SURFACE MOUNT	--	20°40	--	78.3lm/W	灯具尾部 TAIL

#### 外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	25*40	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

#### 电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION
24V DC	0.95	31W/M	IP66	III	--

#### 备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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#### 推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具编号 FIXTURE REF

### CBO8b

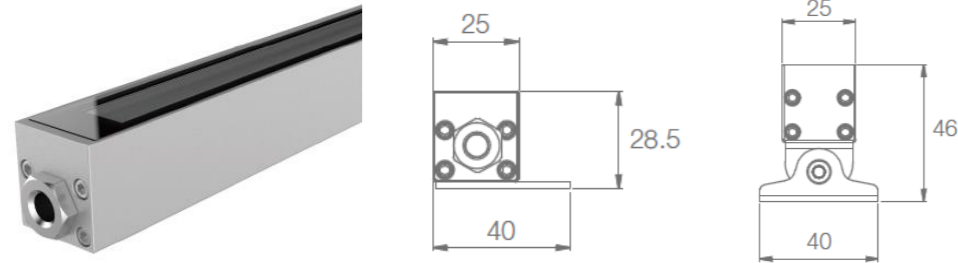
基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED线性洗墙灯 LED LINEAR WALL WASH	28/M	表面安装 SURFACE MOUNT	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装, 埋地安装 SURFACE MOUNT, FLOOR RECESSED	--	20°90°	--	54lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	25*28.5	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION
DC 24V	0.95	28/M	IP66	III	--

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具技术规格说明 LIGHTING FIXTURE SPECIFICATION

灯具编号 FIXTURE REF

U01

基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED埋地灯 LED FLOOR RECESSED LIGHT	3	嵌入安装 RECESSED	CS	ON/OFF

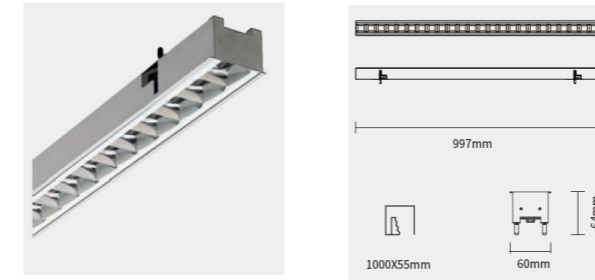
基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED柔性灯带 LED STRIP	28W/M	表面安装 SURFACE MOUNT	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
嵌入安装 RECESSED	--	37	--	65lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
长条形 LINEAR	997*60*64	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION
24V DC	0.95	28W/M	IP20	III	--

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具编号 FIXTURE REF

U02

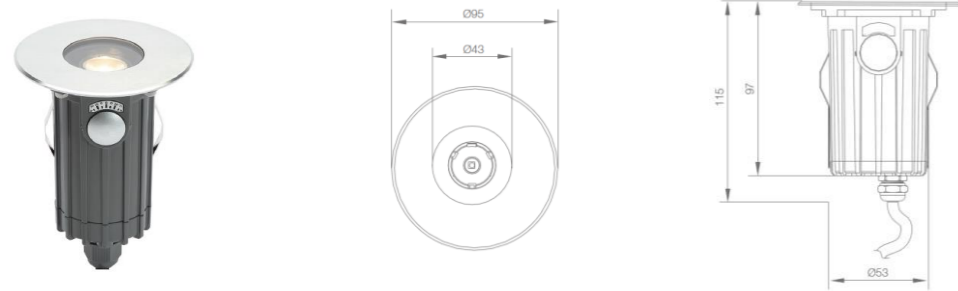
基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED埋地灯 LED FLOOR RECESSED LIGHT	9	嵌入安装 RECESSED	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
埋地安装 FLOOR RECESSED	--	9	--	55lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
圆形 ROUND	Ø 95*97	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 (IP) INGRESS PROTECTION	电气保护 (CLASS) ELECTRICAL PROTECTION	防冲击等级 (IK) IMPACT PROTECTION
24V DC	0.95	3	IP67	III	IK10

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具技术规格说明 LIGHTING FIXTURE SPECIFICATION

灯具编号 FIXTURE REF

SP01

基本信息 GENERAL INFORMATION

灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD
LED投光灯	7.7	表面安装 SURFACE MOUNT	CS	ON/OFF

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING
LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80

图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角 (°) BEAM ANGLE	重量 (kg) WEIGHT	光通量 (lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
埋地安装 FLOOR RECESSED	--	15	--	55lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格 (mm) SIZE	长度规格 (mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
圆形 ROUND	Ø 173*128	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

电源规格 POWER SPECIFICATION

输入电压 (V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率 (W) INPUT WATTAGE	防护等级 (IP) INGRESS PROTECTION	电气保护 (CLASS) ELECTRICAL PROTECTION	防冲击等级 (IK) IMPACT PROTECTION
24V DC	0.95	9	IP67	III	IK10

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
- 靠灯点上部遮挡装防眩处理 INSTALL ANTI-GLARE TREATMENT ON THE UPPER PART OF FIXTURE'S COVER
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

灯具编号 FIXTURE REF

基本信息 GENERAL INFORMATION

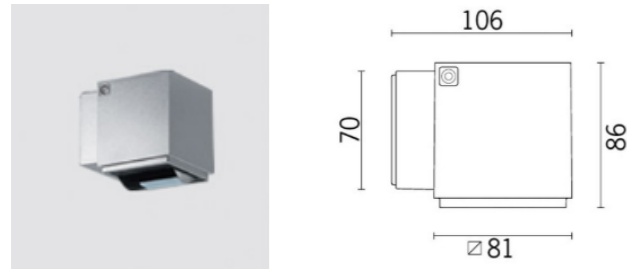
灯具类型 FIXTURE TYPE	瓦数 (W) WATTAGE	固定方式 FIXING	控制对象 CONTROLLER	控制方法 CONTROL METHOD

光源规格 LIGHT SOURCE SPECIFICATION

光源类型 SOURCE	单颗功率 (W) UNIT WATT	光源色温(K) COLOUR TEMP	品牌 BRAND	标准配色偏差 (Step) MacADAM ELLIPSE	显色指数 (Ra) COLOUR RENDERING

LED	--	3000	科锐、欧司朗、日亚 CREE, OSRAM, RIYA	≤5	≥80
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图片资料 IMAGES



灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角(°) BEAM ANGLE	重量(kg) WEIGHT	光通量(lm) LUMEN FIXTURE	出线位置 WIRING LOCATION
表面安装 SURFACE MOUNT	--	wall wash	--	8.3lm/W	灯具尾部 TAIL

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格(mm) SIZE	长度规格(mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH
方形 SQUARE	81*81*86	--	透镜 LENS	灯具本色 ORIGIN	压铸铝 DIE-CAST ALUMINIUM

电源规格 POWER SPECIFICATION

输入电压(V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率(W) INPUT WATTAGE	防护等级 PROTECTION RATING 防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION
24V DC	0.95	7.7	IP66	III	--

备注

- 外观颜色同安装面 THE COLOR IS SAME AS THE INSTALLATION SURFACE
- 实际灯具光通量需满足设计要求 THE ACTUAL LUMINOUS FLUX OF FIXTURE SHOULD MEET THE DESIGN REQUIREMENTS
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推荐品牌及型号 BRANDS

推荐品牌 Recommended	备选一 Alternative 1	备选二 Alternative 2	备选三 Alternative 3	备选四 Alternative 4	备选五 Alternative 5

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图片资料 IMAGES

灯具规格 FIXTURE SPECIFICATION

安装方式 INSTALLATION	可调角范围 ADJUSTABLE	光束角(°) BEAM ANGLE	重量(kg) WEIGHT	光通量(lm) LUMEN FIXTURE	出线位置 WIRING LOCATION

外观形状 DIMENSIONS

灯具形状 FORM	尺寸规格(mm) SIZE	长度规格(mm) LENGTH	透光材料 OPTICAL MATERIAL	外壳颜色 COLOR	外壳材质及工艺 MATERIAL&FINISH

电源规格 POWER SPECIFICATION

输入电压(V/DC/AC) INPUT VOLT	功率因素 POWER FACTOR	系统功率(W) INPUT WATTAGE	防护等级 PROTECTION RATING 防尘防水(IP)INGRESS PROTECTION	电气保护(CLASS) ELECTRICAL PROTECTION	防冲击等级(IK) IMPACT PROTECTION

备注

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